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ABSTRACT

This report presents the results of a study which explored how patron perceptions and demographics related to keyword/Boolean searching on Indiana State University's (ISU) Library User Information System (LUIS), the online public access catalog (OPAC). Two general theses guide the study: (1) whether the use or non-use of keyword searching on LUIS is related to variables such as age, computer experience, subject area, status, and frequency of and experience in searching LUIS; and (2) whether there are certain measures ISU Libraries can take to increase the chance that patrons will use assistance in keyword searching to improve the quality of their keyword searching. An introduction to the study, a review of the literature, an overview of the study methodology, and the survey instrument precede the study results. These results are divided into two major sections: (1) demographic and other user characteristics for all LUIS users; and (2) characteristics of LUIS users who have done keyword searching. One finding of this study is that a majority (80%) of ISU LUIS users have done keyword searching and only 2.5% say that they do not plan to do it in the future. However, most users do not see themselves performing keyword searching most of the time. Few (11%) felt that keyword searching was a superior search method, although 30% said that they use it every time they use LUIS. It is noted that knowledge about keyword searching is not as widespread as it should be. Only half of the users understood that subject (s=) searching uses only Library of Congress Subject Headings. The study also presents evidence that the instructional method used to learn keyword searching--e.g., library instruction classes, keyword help screens, library handouts--is connected with better performance on study questions which determine keyboard knowledge. It is suggested that more effort needs to be concentrated on terminal independent instruction options that are geared more toward user needs. A copy of the patron questionnaire is included. (35 selected readings) (MAB)

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KEYWORD/BOOLEAN SEARCHING ON AN ONLINE PUBLIC ACCESS CATALOG: PATRONS AND THEIR PERCEPTIONS

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October, 1990

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KEYWORD SEARCHING ON LUIS

This is a questionnaire aimed at determining characteristics of users and non-users of keyword (k=) searching on LUIS. It is intended for people who have searched LUIS, but may or may not have used keyword searching. This is an individual project, and the Indiana State University Libraries are not responsible for it, although they may use some of the overall results. Individual results will be confidential. The completed questionnnaire should be returned to **Pat Ensor, Information Desk, Reference Department, Cunningham Memorial Library.**

1. **Gender:** ____M ____F

2. **Status:**
____ISU Fresh./Soph.
____ISU Junior/Senior
____ISU Grad. Student
____ISU Faculty
____ISU Staff/Admin.
____Rose-Hulman Student
____Rose-Hulman Faculty
____St. Mary's Student
____St. Mary's Faculty
____Other (Specify)______
____

3. **Subject Area at ISU:**
____Arts & Sciences-science
____Arts & Sciences-humanities
____Arts & Sciences-soc. sci.
____Business
____Education
____HPER
____Nursing
____Technology
____Not applicable

4. **Level of Education:**
____High School Degree
____Bachelors Degree
____Masters Degree
____Specialist Degree
____Doctorate
____Post-Doctoral Work
____Other (Specify)

5. **Age Range:** ____Under 18 ____18-22 ____23-30
____31-40 ____41-50 ____51-60 ____61 or above

6. Before today, how often have you generally used LUIS?
____several times a week
____no more than several times a month
____no more than several times a year
____only a few times
____never

7. How many years have you been using LUIS?
____0-1 ____1-2 ____3-5

8. Other than LUIS, which of the following kinds of computer systems have you had experience with? (Check all that apply.)
____no other computer systems
____another library's computerized catalog
____CD-ROM databases (like ERIC, ABI/Inform)
____online dial-up databases (like Dialog, BRS)
____OCLC terminal
____a computer at home
____a computer at work
____a computer at school for a non-computer course
____a computer at school for a computer course
____other (Specify)______________________________

9. The last time I did a LUIS search, I first used... (Check one.)
____an author's full or last name
____an author's first name
____a complete title or the first part of it

11. Have you ever done a keyword (k=) search on LUIS?
____yes ____no

12. Do you plan to do a keyword search on LUIS in the future? ____yes ____no ____don't know

13. How did you find out about the availability of keyword searching on LUIS? (Check all that apply.)
____from a librarian
____from a library instruction class/workshop
____from a library announcement
____from the Welcome to LUIS screen
____from a friend, professor, or person at the next terminal
____I was not aware that it was available.
____other (Specify)______________________________

14. Before now, which of the following instruction methods for keyword searching were you aware of? (Check all that apply.)
____library handouts/announcements
____keyword help screens
____library workshops held once per semester
____library instruction classes at instructor request
____on-demand instruction appointments with librarians
____information desk assistance
____none of the above

15. Which of the following kinds of additional instruction on keyword searching would you use if it were available? (Check all that apply.)
____computerized tutorial
____microcomputer interface that makes keyword searching easier
____more descriptive error messages
____more printed handouts
____more library instruction classes
____more library staff assistance
____a video program
____peer tutoring
____other (Specify)______________________________

16. For each statement that follows, indicate whether you agree, disagree, or don't know.

Agree	Disagree	Don't Know	
____	____	____	a. Keyword searching makes it possible to search for a single word anywhere in LUIS for library materials.
____	____	____	b. Keyword searching makes it possible to search for a phrase anywhere in LUIS for library materials.
____	____	____	c. Just typing in k and pressing enter gets you to the key

___ISU Staff/Admin. ___Other (Specify)_____
____

3. **Subject Area at ISU:**
___Arts & Sciences-science
___Arts & Sciences-humanities
___Arts & Sciences-soc. sci.
___Business
___Education
___HPER
___Nursing
___Technology
___Not applicable

4. **Level of Education:**
___High School Degree
___Bachelors Degree
___Masters Degree
___Specialist Degree
___Doctorate
___Post-Doctoral Work
___Other (Specify)

5. **Age Range:** ___Under 18 ___18-22 ___23-30
___31-40 ___41-50 ___51-60 ___61 or above

6. Before today, how often have you generally used LUIS?
___several times a week
___no more than several times a month
___no more than several times a year
___only a few times
___never

7. How many years have you been using LUIS?
___0-1 ___1-2 ___3-5

8. Other than LUIS, which of the following kinds of computer systems have you had experience with? (Check all that apply.)
___no other computer systems
___another library's computerized catalog
___CD-ROM databases (like ERIC, ABI/Inform)
___online dial-up databases (like Dialog, BRS)
___OCLC terminal
___a computer at home
___a computer at work
___a computer at school for a non-computer course
___a computer at school for a computer course
___other (Specify)_____________________

9. The last time I did a LUIS search, I first used... (Check one.)
___an author's full or last name
___an author's first name
___a complete title or the first part of it
___a part of the title other than the first part
___a Library of Congress Subject Heading
___topic words

10. Which of the following statements is the most true about what you expect from a subject search on a topic? (Check one.)
___I like to retrieve just a few, on-target materials, even if I might be missing some relevant items.
___I like to get a long list of related materials so I can go through them on my own, even if I have to look through a lot of things I don't use.

searching on LUIS? (Check all that apply.)
___from a librarian
___from a library instruction class/workshop
___from a library announcement
___from the Welcome to LUIS screen
___from a friend, professor, or person at the next terminal
___I was not aware that it was available.
___other (Specify)_____________________

14. Before now, which of the following instruction methods for keyword searching were you aware of? (Check all that apply.)
___library handouts/announcements
___keyword help screens
___library workshops held once per semester
___library instruction classes at instructor request
___on-demand instruction appointments with librarians
___information desk assistance
___none of the above

15. Which of the following kinds of additional instruction on keyword searching would you use if it were available? (Check all that apply.)
___computerized tutorial
___microcomputer interface that makes keyword searching easier
___more descriptive error messages
___more printed handouts
___more library instruction classes
___more library staff assistance
___a video program
___peer tutoring
___other (Specify)_____________________

16. For each statement that follows, indicate whether you agree, disagree, or don't know.

Agree	Disagree	Don't Know	
___	___	___	a.Keyword searching makes it possible to search for a single word anywhere in LUIS for library materials.
___	___	___	b.Keyword searching makes it possible to search for a phrase anywhere in LUIS for library materials.
___	___	___	c.Just typing in k and pressing enter gets you to the keyword help screens where you can read about keyword searching and/or enter a long keyword search.
___	___	___	d.In keyword searching, if you enter a phrase of two or more words, the words could be anywhere in the library material's record, not necessarily right together.
___	___	___	e.Keyword searching allows you to combine topics together, use synonyms for a

Continued on back

Agree	Disagree	Don't know	
			topic, or get rid of a certain aspect of a topic by using "and," "or," and "not" between words.
____	____	____	f. Keyword searching on LUIS will not search for certain common words, such as "of," "the," or "in."
____	____	____	g. Keyword searching allows you to make sure that certain words occur right together or in the same section of a record, by using "adj" and "same" with your keywords.
____	____	____	h. Keyword searching allows you to limit your search to certain sections of a record by typing in .au. for author, .ti. for title, and .su. for subject after the keyword.
____	____	____	i. Keyword searching allows you to use a dollar sign ($) at the end of a keyword if you want to find more than one word ending, such as computer$ for computer, computers, computerized, etc.
____	____	____	j. To do a search on LUIS using the subject (s=) mode that will work properly, you must have a valid Library of Congress Subject Heading.

*If you have **never** done a keyword search on LUIS, please answer the next question, #17, then skip the rest. After #17, you are through with the questionnnaire, if you have never done a keyword search.*

*If you **have** done a keyword search on LUIS, please skip #17, and continue with the rest of the questions, #18 - #27.*

17. I've never used keyword searching on LUIS because... (Check up to **two** reasons that most apply.)

____It is too difficult to learn.
____It takes too long to learn.
____I don't need to; other forms of searching are adequate for me.
____I don't search very often, so I wouldn't remember how to do it.
____I haven't been able to go to a library instruction session on it.
____There hasn't been staff available to assist me.
____I wasn't aware of this form of searching at all.
____Its response time is too slow.

*Answer the rest of the questions only if you **have** done keyword searching on LUIS.*

18. How often do you use keyword searching on LUIS? (Check one.)

____almost every time I use LUIS
____more than half the times I use LUIS
____less than half the times I use LUIS

21. What methods did you use to learn keyword searching? (Check all that apply.)

____LUIS welcome screen
____LUIS keyword help screens
____trial and error
____library instruction class/workshop
____information desk librarian assistance
____assistance from passing library staff member
____friend or someone at next terminal
____appointment with librarian
____library handouts
____other (Specify)______________________________

22. Check all the statements about the keyword help screens with which you agree.

____I was not aware of them.
____I refer to them only occasionally.
____They are very useful to me.
____They are somewhat useful to me.
____They are not very useful to me.
____They are too tightly packed with information.
____There are too many of them.
____They don't have enough examples.
____Their explanations are not clear.
____They are just right for their purpose.

23. How do you come up with terms for keyword searching on LUIS? (Check all that apply.)

____Use whatever comes to mind.
____Consult professor, reference books, or textbook.
____Use other LUIS records I've found on my topic.
____Use words I found looking in a magazine index, CD-ROM database, or journal article.
____Use *Library of Congress Subject Headings* (big red books.)
____Ask a librarian.
____Use a library-produced bibliography.
____Other (Specify)______________________________

24. About how many of the materials listed in your last keyword search were useful? (Check one.)

____none of them
____some of them
____most of them
____almost all of them

25. How did you feel about the results of your last keyword search on LUIS? (Circle the appropriate number.)

Very Satisfied			Very Unsatisfied
1	2	3	4

26. How do you feel about keyword searching on LUIS in comparison to a=, t=, and s= searching? (Choose the item which most closely applies.)

____Keyword searching is usually superior to all other methods, and I use it most of the time.
____Keyword searching is better when I want to find information on a subject, but I still use a= and t= searching when appropriate.
____I only use keyword searching as a last resort when I can't find something using the other search methods.

27. When your keyword search is unsuccessful, which of the following do you think is usually the reason? (Choose the item which most closely applies.)

____My topic is too specifi

with your keywords.

____ ____ ____ **h.Keyword searching allows you to limit your search to certain sections of a record by typing in .au. for author, .ti. for title, and .su. for subject after the keyword.**

____ ____ ____ i.Keyword searching allows you to use a dollar sign ($) at the end of a keyword if you want to find more than one word ending, such as computer$ for computer, computers, computerized, etc.

____ ____ ____ j.To do a search on LUIS using the subject (s=) mode that will work properly, you must have a valid Library of Congress Subject Heading.

*If you have **never** done a keyword search on LUIS, please answer the next question, #17, then skip the rest. After #17, you are through with the questionnaire, if you have never done a keyword search.*
*If you **have** done a keyword search on LUIS, please skip #17, and continue with the rest of the questions, #18 - #27.*

17. I've never used keyword searching on LUIS because... (Check up to **two** reasons that most apply.)
____It is too difficult to learn.
____It takes too long to learn.
____I don't need to; other forms of searching are adequate for me.
____I don't search very often, so I wouldn't remember how to do it.
____I haven't been able to go to a library instruction session on it.
____There hasn't been staff available to assist me.
____I wasn't aware of this form of searching at all.
____Its response time is too slow.

*Answer the rest of the questions only if you **have** done keyword searching on LUIS.*

18. How often do you use keyword searching on LUIS? (Check one.)
____almost every time I use LUIS
____more than half the times I use LUIS
____less than half the times I use LUIS
____almost never

19. How difficult was keyword searching to learn? (Circle the appropriate number.)

Very Easy			Very Difficult
1	2	3	4

20. How difficult was the use of Boolean operators (and, or not) to learn? (Circle the appropriate number.)

Very Easy			Very Difficult
1	2	3	4

with which you agree.
____I was not aware of them.
____I refer to them only occasionally.
____They are very useful to me.
____They are somewhat useful to me.
____They are not very useful to me.
____They are too tightly packed with information.
____There are too many of them.
____They don't have enough examples.
____Their explanations are not clear.
____They are just right for their purpose.

23. How do you come up with terms for keyword searching on LUIS? (Check all that apply.)
____Use whatever comes to mind.
____Consult professor, reference books, or textbook.
____Use other LUIS records I've found on my topic.
____Use words I found looking in a magazine index, CD-ROM database, or journal article.
____Use *Library of Congress Subject Headings* (big red books.)
____Ask a librarian.
____Use a library-produced bibliography.
____Other (Specify)________________________________

24. About how many of the materials listed in your last keyword search were useful? (Check one.)
____none of them ____most of them
____some of them ____almost all of them

25. How did you feel about the results of your last keyword search on LUIS? (Circle the appropriate number.)

Very Satisfied			Very Unsatisfied
1	2	3	4

26. How do you feel about keyword searching on LUIS in comparison to a=, t=, and s= searching? (Choose the item which most closely applies.)
____Keyword searching is usually superior to all other methods, and I use it most of the time.
____Keyword searching is better when I want to find information on a subject, but I still use a= and t= searching when appropriate.
____I only use keyword searching as a last resort when I can't find something using the other search methods.

27. When your keyword search is unsuccessful, which of the following do you think is usually the reason? (Choose the item which most closely applies.)
____My topic is too specific.
____I'm not finding the right words for my topic.
____I don't know enough about how to do a keyword search.
____LUIS doesn't list material on my topic.

Please add any other comments about keyword searching on LUIS here. Thanks for filling this out!

4/90

KEYWORD/BOOLEAN SEARCHING ON AN ONLINE PUBLIC ACCESS CATALOG: PATRONS AND THEIR PERCEPTIONS

Keyword and Boolean searching modes are now becoming more commonly available on online public access catalogs (OPACs), and questions have arisen regarding their use by library patrons. Which patrons use keyword searching and which do not? How difficult do users perceive it to be? Do those who use it tend to rely on it all the time to the exclusion of all other methods? This study attempts to begin providing answers to these and other such questions in the context of an academic library which uses the NOTIS (Northwestern Online Total Integrated System) online catalog.

INTRODUCTION

The University. Indiana State University is located in Terre Haute, Indiana, and has approximately 11,000 students, including about 2000 graduate students. Since it began as a state normal school, many of the graduate degrees offered are in the education and psychology areas, including a small number of doctorates. Masters degrees are awarded in all schools, however; they include the College of Arts and Sciences, and the Schools of Business, Education, Nursing, Technology, and Health, Physical Education, and Recreation. There are approximately 700 faculty members at the University.

The Library. Indiana State University Libraries include a main library, Cunningham Memorial Library, as well as a science library, which covers chemistry, biology, and geology. Three other small affiliated libraries include the one in library science, one in the Career Center, and one in the Womens' Resource Center. The bulk of the over 1 million volumes owned are held at Cunningham Memorial Library.

Since March, 1985, the ISU Libraries have made the NOTIS online catalog, called LUIS, for Library User Information System, available to the public. It lists over 99% of the library's holdings, including federal government documents since 1976. It also includes the holdings of two nearby smaller institutions--Rose-Hulman Institute of Technology, an engineering school, and St. Mary-of-the-Woods College, a liberal arts institution. The card catalog is still publicly available, but it is not readily visible; it was closed in November, 1985.

LUIS is available through terminals at all the affiliated libraries, the largest grouping of them being at Cunningham Memorial Library, with almost 30 terminals. Most of these are concentrated on the first floor. LUIS is also available on the campus computer network, at all the residence halls, and through dial-in access.

Keyword/Boolean Searching. ISU Libraries made the keyword/Boolean mode of LUIS searching available in the late spring of 1988, so that it had been available for almost two years when this study was done. Prior to the introduction of keyword/Boolean searching, NOTIS had three modes of searching available: author, invoked by typing in "a=[author's last name first name]," title, done by typing in "t=[title of work, omitting initial article]," and subject, done by typing in "s=[Library of Congress subject heading]." These searching modes of searching are more flexible than they may appear, in that the system automatically truncates them and gives a list of matches. This means that it is only necessary to enter "a=johannsen" to get a list of authors with that last name, "t=red badge" to get The Red Badge of Courage, and "s=robot" to get robots, robotics, etc. These modes are, however, obviously not flexible enough to approximate keyword or Boolean searching.

In early 1988, NOTIS introduced the keyword/Boolean search mode, done in its most basic form by entering "k=[word or phrase]. The syntax of this search mode is a very simplified form of the BRS search language, using "and," "or," and "not," as well as the positional operators "adj" (two words together in specified order), and "same" (two words in the same section of the record in any order). If no operator is specified, ISU's system defaults to "and," so that searching a phrase is really "anding" the words together. Nesting and truncation ($) are possible. Search terms may be limited to specific fields by adding ".[field abbreviation]. at the end of a word. Only one search statement is permitted at a time--no back referencing--but the statement may be up to 256 characters long, if entered on the first keyword help screen. There are a series of 8 keyword help screens, obtained by typing in "k," then pressing enter to continue to other screens. The keyword searching mode is listed on the LUIS welcoming screen, along with a,t, and s searching.

Library Instruction. Library instruction at ISU Libraries is primarily carried by the Library Instruction & Orientation Department, which has two librarians. The author and four other librarians participate in instruction when needed. The department offers on-demand instruction sessions at faculty request for classes; most freshmen receive LUIS instruction, including an introduction to keyword/Boolean, in their beginning English class. Advanced instruction in keyword/Boolean searching is offered and publicized once per semester in a workshop that participants sign up for on a voluntary basis; attendance is usually low. Instruction is also available by individual appointment with a librarian.

When keyword/Boolean searching was first unveiled, a publicity effort was undertaken, and special workshops were offered to all groups on campus. Within the year following the introduction, special efforts to publicize keyword/Boolean were taken--posters, bookmarks, announcements, and workshops.

Issues in Keyword/Boolean Searching. Many NOTIS libraries that had had the online catalog available prior to the advent of keyword searching tended to look upon the capability as a "frill," an advanced capability that would be taught after other forms of searching. This tendency was encouraged at the beginning by slow response time for keyword searches, raising questions about how many people should be using keyword mode at one time, and by the fact that keyword mode was more complicated, separated and different from the other modes. Such a response to keyword searching capabilities was not, indeed, limited to NOTIS libraries; other librarians approached them with similar caution.[1]

After keyword mode was available for awhile at ISU Libraries, questions began to arise. The percentage of searches done in keyword mode rose steadily, from 15.6% in November 1988, to 21.4% in November 1989, before levelling off. Did certain users prefer keyword searching all the time, and not use the other modes? Who tended to use keyword searching more? How difficult did they find it? Does library instruction help them learn it? Do those who already use CD-ROMs find keyword mode on LUIS easier? Librarian perceptions at ISU shifted to make instruction in keyword searching a basic part of LUIS instruction; students are taught to do keyword searches to locate correct Library of Congress Subject Headings, where they are useful. Were the librarians right in their feeling that patrons are not using "s=" searching correctly?

All these questions seemed to have even greater importance in light of NOTIS' development and implementation of the Multiple Database Access System (MDAS), which allows NOTIS libraries to load periodical databases alongside their online catalog. The addition of other databases to a library's local system introduces new sets of controlled vocabulary; in the case of the most common early database implementation, the Wilson databases, there is no separate thesaurus and no database-wide controlled vocabulary, so emphasizing "s=" searching seems to be unwise. ISU Libraries will be implementing MDAS in the summer of 1990, using some Wilson databases and ERIC, making knowledge of how keyword searching is perceived by patrons even more vital.

Most of the recent literature examining how patrons interact with online catalogs has quite rightly emphasized study of transaction logs which record exactly what is entered into the online catalog. It is very important, as Brian Nielsen notes, to know what they do, as opposed to what they say they do.[2] Transaction logs, however, cannot reveal users' perceptions of the online catalog, nor can they tell anything about the users themselves. Although questionnaire information should be approached cautiously, it still has much to reveal.

The author undertook to study patron perceptions and demographics related to keyword/Boolean searching on NOTIS to begin to try to answer some of the questions posed above, as well as others. Following are the two general guiding theses of the study.

1) The use or non-use of keyword searching on LUIS is related to variables such as age, computer experience, subject area, status, and frequency of searching LUIS.

2) There are certain measures ISU Libraries can take to increase the chance that patrons will use keyword searching and the quality of their keyword searching.

LITERATURE REVIEW

The most important literature in this area generally falls into three groups: the Council on Library Resources online catalog studies in the early eighties, some individual library OPAC user surveys that relate to keyword searching, and some studies of transaction logs for online catalogs. The author could not discover any other similar attempt to question patrons extensively about their use of keyword/Boolean searching on any online catalog, although some of the CLR studies had some questions about keyword/Boolean searching, and some of the transaction log studies have implications in this area. In addition, some research in online and CD-ROM information retrieval has implications in this area.

Council on Library Resources Studies. In the last half of

1982, a spate of relevant reports began appearing from the Council on Library Resources-sponsored research projects on online catalog use. A study conducted by the Research Libraries Group included Northwestern University's online catalog, LUIS, which did not, of course, provide keyword/Boolean searching at that time; it found that increasing results of a search, finding a correct subject term, and doing a subject heading search were the most commonly cited user problems on LUIS and on the Stanford and Dartmouth systems.[3]

A highly relevant study report appeared in November 1982; Joseph Matthews and Associates surveyed users of six computer systems in seven libraries, including an OPAC which provided keyword searching early on--Mankato State University's PALS. Users of this system had about as much difficulty finding correct subject terms as those of non-keyword systems (32% vs. 39%), but they reported fewer subject searching problems (17% vs. 28%). Sixty-four percent of MSU users reported using keyword searching versus 48% using subject heading searching. About 45% of the searching on MSU's catalog was keyword searching, as opposed to about 19% subject heading searching.[4]

A related 1983 study done by the University of California about its MELVYL system, which allows keyword/Boolean searching, indicated that MELVYL users had greater than average problems increasing a result when too little is received and finding the correct subject term, but less than average problems doing a computer search by subject and using logical terms "and," "or," and "not."[5] The problems are similar to those above of systems without keyword/Boolean searching, but the greater ease of subject searching bears out Mankato State's results. A related study of MELVYL transaction logs found that in a group of keyword searches, about 27% used a single keyword, and almost 73% used explicit Boolean operators between keywords. The study concluded that in general search complexity was low, but some users obviously do use Boolean capabilities when a simple search retrieves too much or too little material.[6]

Another interesting study was done of Syracuse University's SULIRS system in 1983; it has keyword/Boolean capabilities. Analysis of transaction logs showed that many users were apparently unaware of an implicit "and" when they typed in more than one keyword, the fact that the SB command only searched Library of Congress Subject Headings, that they could refine broad searches by combining factors, and that they could get online help. They tended to type in only one or two keywords, which resulted in large lists of results which were seldom completely browsed. When searches were reformulated, it was usually done by changing keywords, not by changing search types.[7]

The overall Joseph Matthews report on the massive 29-institution CLR OPAC study reports that the most common problems patrons reported were increasing the result when too little is retrieved and finding the correct subject term; this result seems to correspond with the keyword/Boolean institutions mentioned above. Thirty-one percent said that subject searching was difficult. Generally keyword searching was used a lot when available, but not usually a requested future enhancement where it was not. Systems with keyword/Boolean received more subject searching and were more successful in known-item searching.[8] Keyword/Boolean searching capabilities did not appear to relate to user satisfaction.[9]

Finally, an OCLC focus group study done as part of the CLR research noted that participants remarked that they often find their subject terms to be too specific or too general, they try many different subject terms when finding too little information, and they consult library staff when they cannot find the right terms.[10]

Library-Conducted OPAC User Surveys. In 1983, researchers at Bell Laboratories built two online catalog systems for their library; one was a menu-based system, using a hierarchy based on Dewey Decimal categories, and one allowed keyword searching of author, title and subject heading terms. The keyword system was overwhelmingly preferred--80% of all searches. Sixty-five percent of keyword search users found what they wanted, versus 30% of menu searchers. Keyword searchers tended to do simple one to two word searches.[11] The users of this system would, of course, have been quite sophisticated technologically.

In 1984, researchers from New York University reported results of interviews carried out with patrons who used their Geac OPAC, the card catalog or both to find information. Out of 34 OPAC users, only one performed a keyword search. The researchers believed that the users were not generally very aware of this option, and that they believed that when they entered a subject heading search, they were actually doing a keyword search.[12]

Some interesting work has been done in Australia; in 1984, Stephen V. O'Connor of the University of New England reported on the results of an OPAC user survey which related computer literacy to OPAC acceptance. The system being reported on did not have keyword/Boolean capabilities, but users were questioned as to whether these capabilities were desirable. Over 60% of the answers to the question of whether Boolean search logic was helpful seemed to indicate that the respondents did not know what it was--38% said "does not apply" and 22.5% were neutral. O'Connor concluded that the computer literate are more anxious to have Boolean searching available.[13]

In 1985, librarians at Georgia State University reported on a series of 50 interviews done with users of their card catalog and their COM (computer output microfiche) catalog, done to prepare for teaching their new PALS system. The researchers took the patrons' searches and performed them on PALS; they found that the keyword, Boolean and truncation features would be quite useful for the patrons to obtain satisfactory answers to their information needs.[14]

In a study which surveyed faculty use of subject searching in card and online catalogs at the University of Houston-University Park, Carolyn Frost found that 27.5% of the faculty used keyword searching "always" or "frequently." She noted that "the percentage of frequent users of the keyword search was twice as high among humanities/social science faculty as it was among science/engineering faculty." Fifty-two percent of the faculty wanted the enhancement of being able to combine terms in a search added to the catalog.[15]

In a survey reported in 1989, but done in 1987 (pre-keyword/Boolean), University of Central Florida librarians surveyed users about their attitudes toward LUIS, especially in comparison to the system it replaced, CLSI. Ninety percent of the 125 respondents found LUIS easy to learn, and 88% found it easy to use. Seventy-nine percent found LUIS satisfactory or very satisfactory; it came out better than CLSI on all such measures. The breakdown of how most students learned LUIS came out as follows: printed instructions - 38%, library staff assistance - 8%, fellow students - 5%, onscreen help - 45%. (UCF did not offer routine library instruction classes on LUIS at this time.)[16]

Finally, in a study reported late in 1989, Alex Koohang reported on a study done at Southern Illinois University on the latest, menu-driven version of the Library Catalog System, developed at the University of Illinois. He used the Computer Attitude Scale: Anxiety, Confidence and Liking, and the Computer Attitude Scale: Perception of Computer Usefulness to study attitudes of 102 undergraduates toward LCS. He found that gender was an influence on liking of the system: males liked it more and found it more useful. Age and college level were not significant factors. Keyboard familiarity also contributed to comfort with the system. He concluded that LCS needs to be made as user-friendly as possible to allow patrons to develop self-confidence in its use.[17]

Transaction Log Studies. Some useful studies have been done of what patrons actually enter into the computer on online catalog searches. Several have been done on pre-keyword/Boolean NOTIS, and several have studied other systems with keyword/Boolean capabilities. More interesting work should appear in this area in the next few years, since NOTIS' new Multiple Database Access System makes monitoring user entries even easier, and since users of MDAS are even more likely to use keyword/Boolean searching.

Two researchers from the Graduate Library School at University of Chicago studied Northwestern University's NOTIS system transaction logs; one study looked to see if errors users made could have been corrected for if authority files were available on the system. Arlene Taylor concluded that only 6.4% of the over 500 searches could have been helped by authority files.[18] Jean Dickson looked at known-item (author and title) searches that failed. Almost 40% of the title searches which retrieved no hits were for items that were in the database; for over 51% of the author searches, this was true. Common errors were failure to omit the initial article in a title search, entry of author forename first, misspellings, and simply incorrect input.[19] Keyword/Boolean searching could now be of aid in the first two problems, if users knew it was available, but the latter two problems are more intractable.

Brian Nielsen and Betsy Baker of Northwestern studied NOTIS transaction logs in a large CLR-sponsored study aimed at learning about effects of bibliographic instruction on user performance with an OPAC. They found that users who had had a live instructional presentation made fewer errors on the OPAC than those who had only received a printed brochure.[20] This study was also pre-keyword/Boolean.

The most extensive work done in analyzing user searches on keyword systems has been done in the United Kingdom and Australia. A librarian at the University of Hull, which was one of the earliest users of the Geac system in the U.K., studied keyword searches through transaction logs. He found that over a period of 8 months, the percentage of one word keyword searches ranged from 31 to 38%, two word searches from about 45 to about 50%, three or more word searches from about 13 to about 18%, and complex searches (using Boolean operators and/or truncation) from about 6 to about 10%. The one word searches resulted in the most matches; 36.6% found 100 or more matches, and only 10.4% resulted in zero matches. For the two word searches, 34.5% found zero matches, and 38.6% found one to nine. For the three word searches, 48.2% found zero matches, and 42% found one to nine. Tom Graham concluded that user comments showed, that although learning the system was often difficult, the keyword/Boolean capability was valuable. His study indicated the need for more online help.[21]

Two transaction log analyses have been done of user errors in keyword searching of the URICA system at Australian National University Library and at South Australian Institute of Technology Library. Margaret Henty at Australian National University found in the first study that keyword searches constituted only 2% of the searches carried out. An analysis of unsuccessful keyword searches found that the majority of problems fell into four categories: 32.7% showed spelling errors, 25.5% were unidentifiable terms, 14.1% were legitimate terms, although not in the database, and 13.6% were terms containing punctuation, which the URICA system would not match in keyword mode. Henty concluded that better online help and more instruction are needed, as well as some system design improvements.[22] This study was replicated at the South Australian Institute of Technology; there, 12.4% of the searches recorded were keyword searches. Otherwise, results were very similar, even though SAIT recorded 1388 unsuccessful searches versus 419 at ANU. Of the studied keyword entries, 35.3% showed spelling errors, 11.5% were unidentifiable terms, 21.4% were legitimate terms, and 13.2% contained punctuation. Just as at ANU, these categories accounted for the great majority of errors.[23]

In late 1989, a transaction log study appeared with some implications for this project; Thomas Peters of University of Missouri-Kansas City discusses the relative merits of transaction log studies and surveys. He reports on a transaction log study done on LUMIN, their WLN-based OPAC system. He found that very little Boolean mode searching was done, and from 50 to 80% of the "and" searches done resulted in zero hits. He notes that "... many users tend to work with poor, inefficient, high-recall searches rather than attempt to refine their searches and make the results more precise."[24]

Information Retrieval Research. The final relevant category of literature is related theoretical study of information retrieval--in particular, studies of comparatively unsophisticated end users as they interact with information retrieval systems.

Christine Borgman has done some invaluable research in this area, but a few others have studied end user behavior with systems that offer keyword/Boolean searching. Surprisingly little of the research on end user searching turned out to be of value in this study, however.

An early study of the behavior of doctors searching Medline yielded some interesting information. Looking at a sample of 400 recorded searches on Medline by these end users, the researchers found that 79.6% of the sessions used the "and" operator, and 1 to 5 "ands" were used in 56.8% of the sessions. Truncation was used successfully in 9.8% of the searches. Only .6% of the searches used field abbreviations, although 17.4% used the ALL indicator, to have Medline do a search not limited to a field. The researchers concluded tentatively that users

> tend to learn and use the minimum of techniques with which they can get the job done--being content to do something the long way rather than to try to remember a short one. It also appears that some will look at many references offline to insure recall, rather than to try a sophisticated strategy to get precision in their searches.[25]

Christine Borgman of the Graduate School of Library and Information Science at the University of California, Los Angeles published several papers in 1986 that focused on individual differences in information retrieval and user mental models. She looked for what factors account for differing rates of success in information retrieval. She has found evidence that indicates that students majoring in science and engineering perform significantly better on a Boolean logic-based search system than social science and humanities majors, even when controlling for previous computer experience. She has also done research that indicates that engineering majors show more of the logical reasoning and problem solving aptitudes that have been shown to be related to computer programming and information retrieval than English and psychology majors do.[26] Borgman's original research postulated that unsophisticated end users who have a mental model of an information retrieval system will perform better on it. This was born out to some extent by her results--those with a mental model did better on complex tasks, although not necessarily on simple, procedural ones. [27]

Borgman also wrote an invaluable synthesis of research relating information retrieval studies to online catalog user behavior. She notes that research on information retrieval systems, including online catalogs, falls into two different areas--those that focus on individual differences and those that look at different systems. More research should be done to determine how to compensate for individual differences and make systems easier to use.[28]

A few more recent studies of end user interaction with information retrieval systems have followed the 1982 report cited above and have implications for this study. A study of the factors that differentiate between successful and unsuccessful searches by biomedical professionals on Medline from the BRS Colleague system was reported in 1986. Most problems were found to stem from search strategy difficulties; the more successful searches happened to be for topics where a simple search was adequate. The extent to which the different system search features were used was reported: 77% of the searches used "and," 17% used "or," 38% used truncation, 29% used field qualifiers, and 26% used positional operators.[29]

An interesting study has been done in the United Kingdom about retrieval modes for pictorial information on videodisc. Although this type of information is obviously different from that that would be found in a library OPAC, it is worthy of note that keyword searching was preferred by 51% of the users of the search system, as opposed to browsing and use of a joystick. Of the four groups of users, librarianship students and librarians were about twice as likely to do a keyword search than school children and postgraduate students.[30]

In a paper presented at an American Society for Information Science conference in 1989, a comparison of user interfaces for 3 OPACs and 5 CD-ROM systems continues Borgman's trend of looking at OPACs in light of other information retrieval systems. Although this paper does not examine actual user performance or perceptions of these systems, it does compare their keyword/Boolean retrieval capabilities. All offered keyword retrieval, and all but Autographics offered Boolean.[31]

Finally, in a very recent study of CD-ROM users' desire to update CD-ROM searches with online searches, researchers at Texas A & M monitored CD-ROM searches by end users that show implications for this study. They found "that the majority of the participants did not understand the basic concepts of searching, such as selection of search terms, use of Boolean operators, truncation, and limiting." They concluded that many, if not most, searchers were doing searching very inefficiently and "happily printed out hundreds of citations." They also found that searching concepts did not carry over from one CD-ROM system to another.[32]

Summary. The literature to date indicates that users of OPACs tend to use keyword/Boolean capabilities relatively little, and end users of other information retrieval systems find Boolean searching fairly difficult to learn and do. Users tend to do simple searches and make little use of complex features. The main area showing significant individual differences in relation to keyword/Boolean systems has been area of subject specialization, although evidence here is contradictory. Although there is evidence that users found the pre-keyword/Boolean form of LUIS easy to learn and use and that library instruction helped elicit better performance on it, there have been no such studies yet of LUIS with keyword/Boolean, prior to this one.

METHODOLOGY

The Questionnaire. The author decided that the most useful and feasible way to obtain the information desired would be by way of a questionnaire. Although it is realized that the information obtained is not necessarily an accurate report of what users do, a questionnaire is the only way short of individual interviews and testing to elicit subjective opinions and some indicators of knowledge level. Since the author was working alone and wished to have a large sample size to work with, individual interviews were not feasible. The information obtained is recognized to only give an approximate indication of what users in a certain environment perceive, but it should still be of some value to those who work with OPACs.

In determining questions to ask, the author perused over ninety articles, books, book chapters, ERIC documents, etc. The aim was to have the questions in a close-ended, objective format, to allow for meaningful quantification. Approximately fifty questions suggested by the literature and the aims of the study were sifted down to 27, with one question having 10 parts. Three other ISU librarians reviewed the questions and advised on appropriate inclusions, although the final decision and responsibility was the author's. The questionnaire specified which questions could have multiple options checked off and which ones should have only one option chosen. Although not all respondents obeyed these directions, questions were analyzed in this fashion; those filled-out questionnaires that did not fit this proscription were counted separately.

Questions 1 through 16 were aimed at both users and non-users of keyword/Boolean, and the first 10 of them attempted to elicit demographic and other user characteristics. Questions 17 through 27 were aimed at users of keyword/Boolean searching.

In an attempt to make the questionnaire look more "answerable," it was produced using a desktop publishing program, Pagemaker for the IBM PC, and it was made to fit on a two-sided legal sheet. Appropriate stylistic features, such as italicization and boldfacing, were used to make the questionnaire clearer and more readable.

Questionnaire Administration. The author personally administered the questionnaire over a two month period, from the end of January, 1990 to the beginning of April, 1990. Users of LUIS at the main terminal cluster on the first floor of Cunningham

Memorial Library, the main university library, were approached and told the following: "Hi, I am doing a research project about keyword/Boolean searching on LUIS. I would appreciate it if you would fill out this questionnaire and leave it at the Information Desk." The author felt that personally seeking questionnaire responses would not bias the result in this kind of project due to the nature of the particular questions that were being asked. Practically speaking, users would not answer the questions without being personally asked to. Library workers were not approached to answer the questionnaire, since it was felt that this would skew the results.

Most of the two-hour sessions of giving out questionnaires were in the evenings and on weekend afternoons, although two of them were on weekdays. Evenings and weekends produced the most users, and the most users who were willing to fill out questionnaires. An attempt was made to approach anyone using a LUIS terminal during the sampling period, although with only one questionnaire administrator, some users were inevitably missed. Respondents were given the option of taking the questionnaire away and filling it out and returning it later. Even though there is a science library on campus, as mentioned above, questionnaires were not given out there since the subject areas covered, chemistry, biology, and geology, were actually rather narrow; as it turned out, approximately 25% of the respondents were in a science or technology area anyway.

The only exception to the above procedure was made in an attempt to elicit adequate faculty response. Since comparatively few faculty members were to be found doing searches at the main cluster, the author chose approximately 60 faculty in all disciplines she knew to be LUIS searchers and mailed the questionnaire to them. This effort produced about a fifty percent response rate. Ultimately 400 usable questionnaire responses were obtained. Although it proved impossible to keep an exact count of how many questionnaires were distributed, the author estimates the response rate to have been about 35%.

Processing of Results. The data retrieved was entered into a database through the Kwikstat statistical program. Questions that had been left blank, or where more than one answer was given, but only one was asked for, were indicated as such in the database, and these are not generally included in statistical analyses. For the last part of the questionnaire, non-users of keyword were not supposed to answer it, so about 300 responses were received on that section.

Kwikstat reported raw numbers and it allowed correlations of factors and provided Chi squares and p coefficients. Results significant to the .05 level were noted, but those at the .01 level were emphasized by the author.

RESULTS

Presentation and discussion of results will be broken down in sections that approximate parts of the questionnaire. Raw numbers and percentages will be presented, as well as significant correlations at the .05 and .01 levels. Unless otherwise noted, differences discussed were significant at the .01 level. The same topic may be touched on at two different points to provide emphases on different factors.

Demographic and Other User Characteristics

The first ten questions elicit demographic and other user characteristics in order to correlate them to factors found later in the questionnaire. They will be discussed in the order the questions were asked, with results given, and any significant correlations noted.

Gender. Out of 400 respondents, 196 (49%) were male, and 199 (49.8%) were female; five left this blank. This differs from the CLR study reports, in that 60% of OPAC users in that were male,[33] but over time, readiness to access the OPAC has undoubtedly evened out over genders, and the ISU users had very little alternative.

Only two differences were found in the factors addressed in the questionnaire related to gender. Females were significantly (at the .01 level) more likely than males to say that they were aware of information desk assistance as a method of keyword/Boolean instruction (question 14). Only 49 of 195 males, or 25.2%, were aware of this method, versus 83 of 198 females, or 41.9%. The author is not aware of any factor which would account for this.

A more interesting difference appeared in question 23, about sources of terms for keyword searching. A variation significant at the .01 level appeared between males and females in using the Library of Congress Subject Headings. Thirty-six of 149 females, or 24.2%, said they use LCSH as a source for keyword terms, as opposed to 12 of 147 males, or 8.2%. Put another way, three fourths of the people who said they use LCSH for keyword terms were female. Again, it would be difficult to speculate on a reason for this difference.

In no other question on the questionnaire was gender a significant factor in the outcome. This is not evidently a profitable area in which to search for individual differences in keyword/Boolean.

Status. Status (type of student, faculty, etc.) proved to be a much more useful factor of classification of respondents. The raw numbers and percentages were as shown in Table 1.

Table 1 Status of Respondents

ISU Freshman/Sophomore	126(31.5%)	Rose-Hulman Student	21(5.3%)
ISU Junior/Senior	114(28.5%)	Rose-Hulman Faculty	2(.5%)
ISU Graduate Student	49(12.3%)	St. Mary's Student	2(.5%)
ISU Faculty	57(14.3%)	St. Mary's Faculty	1(.3%)
ISU Staff/Administration	5(1.3%)	Other	22(5.5%)
Blank	1(.3%)		

(Percentages do not exactly equal 100 due to rounding.)

Rose-Hulman and St. Mary's are, as mentioned above, local colleges whose students and faculty have LUIS in their own libraries, but who often use ISU Libraries. If one lumps different categories of students and faculty together, there are 312 students, constituting 78%, and 60 faculty, or 15%. In one analysis, for the purpose of meaningful correlation, some categories were collapsed together: ISU Freshmen/Sophomores, ISU Juniors/Seniors, Rose-Hulman Students, and St. Mary's Students; and ISU Faculty, ISU Staff/Administration, Rose-Hulman Faculty, and St. Mary's Faculty. ISU Graduate Students were kept a separate category. Analysis was also done using only ISU respondents, keeping the differentiation between underclassmen and upperclassmen. It should be noted that in some cases numbers in each status are rather small, so results should be taken as only possible indicators.

In the area of frequency of use, faculty and ISU underclassmen tend to report less frequent use of LUIS, although if all undergraduate students are lumped together, they tend to have the same patterns as graduate students. (See Table 2.) ISU Freshmen/Sophomores reported using LUIS several times a week at a rate of 18.3%, versus 31.6% for upperclassmen, 30.6% for graduates, and 17.9% for faculty. Results for "No more than several times a month" were similar for statuses across the board, ranging from 42.1% for underclassmen to 46.4% for faculty. "No more than several times a year" was chosen by 9.5% of ISU underclassmen, 13.2% of upperclassmen, and 14.3% of graduate students, but 28.6% of ISU faculty chose this option, indicating infrequent use. Twenty-seven percent of the freshmen/sophomores said they had used LUIS only a few times, versus 9.6% of juniors/seniors, 10.2% of graduate students, and 7.1% of faculty. The only four ISU respondents who had never used LUIS before were underclassmen.

Table 2 Frequency of LUIS Use by ISU Respondents

	Several/week	Sev./month	Sev./year	Few times	Never
Fr./Soph.	23(18.3%)	53(42.1%)	12(9.5%)	34(27%)	4(3.2%)
Jun./Sen.	36(31.6%)	52(45.6%)	15(13.2%)	11(9.6%)	0
Grad.Stu.	15(30.6%)	22(44.9%)	7(14.3%)	5(10.2%)	0
Faculty	10(17.9%)	26(46.4%)	16(28.6%)	4(7.1%)	0

Percentages do not always equal 100% due to rounding.

The results for just the ISU respondents test out as significant at the .01 level, but the results do not appear significant when the collapsed categories listing is done, so this is only a tendency. The trend of the data seems to indicate, not surprisingly, that more underclassmen hadn't had much occasion to use LUIS yet, and were less likely to use it very frequently. Faculty, on the other hand, had all used it, but tend to use it less frequently.

Status made a difference that is perhaps to be expected in length of LUIS searching experience. The results are what one would logically expect, considering how long each status group has likely been on campus. (See Table 3.) The great majority of ISU underclassmen had 0-1 years experience with LUIS, whereas most upperclassmen had 3-5 years. Almost 45% of graduate students had 3-5 years experience. Almost three quarters of the faculty respondents had 3-5 years experience, although they still account for only 29.9% of that group. The results when categories were collapsed are even more straightforward; percentages of respondents that used LUIS 0-1 years in each status drop from 37.8%, or 99 of 262, of undergraduates, to 20.4%, or 10 of 49, of graduate students, to 7.7%, or 5 of 65, of faculty. The figures for those with 1-2 years experience are not as disparate, with 31.7%, or 83, of undergraduates, 34.7%, or 17 of graduate students, and 23.1%, or 15, of faculty. Change again comes with the numbers for those with 3-5 years of experience: 30.5%, or 80, for undergraduates, 44.9%, or 22, for graduate students, and 69.2%, or 45, for faculty. Generally, a higher percentage of faculty were likely to have the longest experience with LUIS.

Table 3 Length of LUIS Experience by ISU Status

	0-1 Years	1-2 Years	3-5 Years
Freshman/Sophomore	84(67.2%)	37(29.6%)	4(3.2%)
Junior/Senior	11(9.6%)	33(28.9%)	70(61.4%)
Graduate Student	10(20.4%)	17(34.7%)	22(44.9%)
Faculty	2(3.6%)	13(23.2%)	41(73.2%)

Percentages do not always equal 100% due to rounding.

Status also made a significant (at the .01 level) difference in an area that is not strictly the target of this study, but is of interest. Significantly more graduate students and faculty report experience with CD-ROM systems, than do undergraduates. Upperclassmen even have more such experience than underclassmen. Only 12.7% of ISU freshmen/sophomores have used CD-ROMs, as opposed to 40.4% of juniors/seniors, 53.1% of graduate students, and 54.4% of faculty. For undergraduate students overall, including the other two colleges, 29.3% have CD-ROM experience.

The next item on the questionnaire affected significantly by status is the question at the heart of the study. When addressing the question of who has used keyword searching before, one finds that there is a steady regression from ISU underclassmen to faculty in keyword use. (See Table 4.) Over 1/3 of the ISU faculty responding had not used keyword searching, versus at most about 1/4 of any grouping of students. When looking at all undergraduates together, 85.2% of them had done keyword searching, versus 73.5% of graduates, and only 68.2% of faculty.

Table 4 Keyword Searching Use by ISU Status

	Have Used Keyword	Haven't Used Keyword
ISU Freshmen/Sophomores	112(88.9%)	14(11.1%)
ISU Juniors/Seniors	96(84.2%)	18(15.8%)
ISU Graduate Students	36(73.5%)	13(26.5%)
ISU Faculty	37(64.9%)	20(35.1%)

Since the different statuses have not used LUIS for significantly different amounts of time and freshmen/sophomores used LUIS significantly less frequently, LUIS experience would not seem to account for this difference. One possibility is that faculty are doing a different kind of searching for which they are less likely to need keyword. The literature has generally shown that faculty are often doing author searching, as opposed to subject searching. The question in this study which asked what the respondent entered on his/her last LUIS search did not have significant variations based on status, but there was a tendency for faculty to do more author searching and less subject searching. Thirty-six percent of ISU faculty reported doing an author search last time they used LUIS, versus 12.9 to 16.2% of the different student groups. Only 44% of ISU faculty reported searching for a Library of Congress Subject Heading or topic words, versus 54.3% to 62.9% of students.

Another possibility is that faculty have not received as much instruction in this area. Quite understandably due to the nature of the library instruction program at ISU Libraries, described above, the percentage of respondents who learned of the availability of keyword searching from library instruction classes/workshops (question 13) drops as one moves from underclassmen to upperclassmen and graduate students to faculty. Almost half (48.4%) of ISU freshmen/sophomores learned of keyword this way, versus 26.3% of juniors/seniors, 26.5% of graduate students, and only 14% of faculty. Thirty-five percent of all undergraduate respondents learned this way, and 17.9% of all faculty respondents. Freshmen and sophomores have been introduced to keyword/Boolean in their beginning English classes in the last two years, but the other statuses have not been reached in this way to the same extent.

Faculty, on the other hand, were much more likely to have heard of keyword/Boolean searching through a library announcement. Only 35 people checked this option, but 21(60%) of them were faculty (when counting all faculty respondents). Of all the faculty answering, 31.8% had heard of keyword through library announcements, versus 4.8% of all undergraduates, and 2% of graduate students. Publicity is evidently reaching faculty to a greater extent, but still not saturating them.

Undergraduates were more likely to have learned of the availability of keyword/Boolean searching through a friend, professor, or person at the next terminal than were graduate students or faculty. Fully 23.6% of them checked this option, versus 8.2% of graduate students and 9% of faculty.

Finally, faculty were more likely than any other group to say that they had not been aware of keyword/Boolean searching at all. Four percent of ISU freshmen/sophomores were unaware of it, 7.9% of juniors/seniors, 10.2% of graduate students, and 19.3% of faculty--11 out of the 57 surveyed. Undergraduates are evidently being reached about keyword/Boolean searching very well, but faculty could be more informed, although, of course, over 80% of them were aware of it. It must also be noted that undergraduates might have been less willing to admit they didn't know about keyword/Boolean, but it is not possible to know to what extent this may have been a factor. One could even argue that all faculty may not have admitted their ignorance in this area.

In question 14, respondents were asked what keyword instruction methods they were aware of. Forty-one people were aware of library workshops held once per semester; when broken down by status, a tendency appears which is almost significant to the .05 degree. Faculty tended to be more aware of this method, although, again, not truly significantly. Twelve of 57 ISU faculty, or 21.1%, were aware of these workshops, as were 5 out of 48(10.4%) graduate students, 8 of 114(7%) of upperclassmen, and

13 of 125(10.4%) underclassmen.

In another interesting tendency which is significant only to .05, ISU faculty and underclassmen were more likely than upperclassmen and graduate students to know about library instruction classes at instructor request as a way to learn keyword/Boolean searching. Of 125 ISU freshmen/sophomores, 49 (39.2%) were aware of this, as were 22 of 57 ISU faculty (38.6%). Only 29 of 114 juniors/seniors (25.4%) knew about this method, and 10 of 48 graduate students (20.8%).

Only 32 people knew about on-demand instruction appointments with librarians as a keyword/Boolean instruction method. Half of them were ISU faculty; 28.1% (16 of 57) of them said they knew of this. Only 5.6% (7 of 125) underclassmen knew of this method, as did 1.8% (2 of 114) upperclassmen, and 8.3% (4 of 48) graduate students. Faculty evidently know about several instruction opportunities for keyword/Boolean searching, but they do not take advantage of them. They probably consider them only in relation to their students.

Differences in response based on status next appeared in question 15, where people are asked which keyword/Boolean instruction methods they would use if they were available. These differences in response are understandable; the most significant one appears on the option of more library instruction classes. Seventy-two percent (18) of the 25 ISU respondents to this option were freshmen/sophomores. Of 124 underclassmen, 14.5% of them checked this option, versus 1.8% (2 of 114) upperclassmen, 10.4% (5 of 48) graduate students, and no faculty members, out of 57.

This underscores the probability that faculty do not consider library instruction classes for themselves; some of those who are newer to ISU or at a more sophisticated level as students want more instruction, although whether they would actually use it is impossible to say.

A slight difference (to the .05 level) according to status appears for the option of peer tutoring as a desirable instruction method for keyword/Boolean. Again perhaps understandably, the same kind of differences according to status appear in answers to this option as with library instruction classes. The group most interested in this is ISU underclassmen--21 of 124 (16.9%); the group least interested is ISU faculty, although 3 of 57(5.3%) them did check this option. Eight of 114 upperclassmen (7%) and 5 of 48 (10.4%) graduate students also checked this option.

In question 16, which is basically a test of keyword/Boolean-related knowledge, on 5 out of 10 true-false statements, there were differences in response based on status, although only 2 of the differences were significant to the .01 level. Respondents could agree, disagree, or say they didn't know about a statement about keyword/Boolean searching. All of the statements were in fact true.

Question 16a says "Keyword searching makes it possible to search for a single word anywhere in LUIS for library materials"--the most basic fact about keyword searching. The "lower" the status of the respondent, the more likely this was to be agreed with--answered correctly. (See Table 5.) ISU freshmen/sophomores had this right to the greatest extent--78.3% of them agreed. Only 46% of ISU faculty agreed; 40% of them didn't know. When looking at overall undergraduate student results, including other colleges, 75.7% (193 of 255) got it right; 15.7% didn't know. Overall faculty results were that 28 of 59 (47.5%) got it right; 37.3% (22) didn't know.

Table 5 Answers to Question 16a by ISU Status

	Agree	Disagree	Don't Know
ISU Freshmen/Soph.	94(78.3%)	10(8.3%)	16(13.3%)
ISU Juniors/Seniors	86(76.8%)	6(5.4%)	20(17.9%)
ISU Graduate Stud.	32(69.6%)	1(2.2%)	13(28.3%)
ISU Faculty	23(46%)	7(14%)	20(40%)

Percentages do not always equal 100% due to rounding.

For the statement "keyword searching makes it possible to search for a phrase anywhere in LUIS for library materials" (question 16b), the results were not as clear cut, although there was a variation based on status significant to .05. In this response, graduate students were more likely to get it right (63% or 29 of 46) than ISU upperclassmen (58.2% or 64 of 110) or underclassmen (57.5% or 69 of 120). These results do not vary that much, but faculty were still much less likely to get this right--only 42% of ISU faculty (21 of 50).

This tendency continues for question 16c, although again only significant to the .05 level. When looking at an overall breakdown of all academic respondents to the statement "just typing in k and pressing enter gets you to the keyword help screens where you can read about keyword searching and/or enter a long keyword search," one finds that 55.9% (142 of 254) of all undergraduates agreed with it, as did 50% (23 of 46) graduate students, and only 38.3% (23 of 60) of all faculty. When considering ISU faculty only, the percentage of correct responses drops to 33.3% (17 of 51).

Status makes no difference in responses to questions 16d - 16g, but in 16h, differences appear again, although only significant to .05. In this case, ISU juniors/seniors and ISU faculty were less likely to agree with the statement "keyword searching allows you to limit your search to certain sections of a record by typing in .au. for author, .ti. for title, and .su. for subject after the keyword." ISU freshmen/sophomores were most likely to agree (36.8% or 43 of 117), then graduate students (31.8% or 14 of 44), juniors/seniors (26.3 or 29 of 110), and faculty (23.4% or 11 of 47).

Finally, a difference significant to .01 appears in question 16j, on the statement "to do a search on LUIS using the subject(s=) mode that will work properly, you must have a valid Library of Congress Subject Heading." This is the only statement that addresses knowledge not directly related to keyword/Boolean searching. Librarians suspect that many LUIS users do not realize that s= searching pulls from LCSH, but the results for this statement are somewhat surprising. (See Table 6.) The majority of students did realize this, but most faculty did not. Less than 40% of ISU faculty agreed with the statement, versus around 60% of each student group. On one hand, it is rather encouraging that most students have learned this characteristic about s= searching, but disturbing that most faculty have not.

Table 6 Answers to Question 16j by ISU Status

	Agree	Disagree	Don't Know
ISU Freshmen/Soph.	64(56.6%)	15(13.3%)	34(30.1%)
ISU Juniors/Seniors	67(62%)	22(20.4%)	19(17.6%)
ISU Graduate Stud.	28(63.6%)	4(9.1%)	12(27.3%)
ISU Faculty	18(38.3%)	6(12.8%)	23(48.9%)

Percentages do not always equal 100% due to rounding.

The next question where significant variation appears based on status is Question 18, about how often the respondent uses keyword searching. (This begins the section of the questionnaire aimed only at keyword users.) The most significant variation appears when looking at overall academic response (see Table 7), although the ISU response is significant to .05. Over 65% of all undergraduate students report using keyword almost every time they use LUIS or more than half the time, versus less than 55% of graduate students and less than 36% of faculty. Results for ISU respondents are similar, with even fewer faculty using keyword frequently--31.5% or 11 of 35. Based on results so far, this might be due to different types of searching needs, or to ignorance.

Table 7 Frequency of Keyword Searching by Overall Academic Status

	Almost every time	More than 1/2	Less than 1/2	Almost n
Undergrad. Stu.	93(44.9%)	42(20.3%)	44(21.3%)	28(13.
Graduate Stud.	12(34.3%)	7(20%)	9(25.7%)	7(20%
Faculty	11(26.2%)	4(9.5%)	21(50%)	6(14.

Percentages do not always equal 100% due to rounding.

The next area in which significant difference appears based on status is difficulty of learning Boolean operators (question 20). The tendency seems to run in the opposite direction from results so far; that is, faculty feel that Boolean operators were much easier to learn than other groups. The tendency is significant to .01 with ISU respondents (see Table 8) and .05 with overall academic response. Responses on this question are rather low, with 40% of the respondents leaving it blank, so the universe of respondents is smaller than on most other questions. ISU upperclassmen and faculty felt Boolean operators were easiest to learn, with over 69% of juniors/seniors and over 79% of faculty circling 1 or 2, with 1 being very easy. When looking at overall academic response, one finds the results very similar. It might be speculated that faculty are actually more familiar with the concepts of Boolean logic than most students, or that faculty are less willing to admit ignorance.

Table 8 Difficulty of Learning Boolean by ISU Status

	1(Very Easy)	2	3	4(Very Difficu
ISU Freshmen/Soph.	10(11.6%)	27(31.4%)	34(39.5%)	15(17.4%)
ISU Juniors/Seniors	16(20.5%)	38(48.7%)	19(24.4%)	5(6.4%)
ISU Graduate Students	6(22.2%)	5(18.5%)	10(37%)	6(22.2%)
ISU Faculty	7(29.2%)	12(50%)	4(12.5%)	1(4.2%)

Percentages do not always equal 100% due to rounding.

The next tendency to significant variation is slight, but worth noting. Variation at the .05 level appears in overall academic response to the second option on question 21; when asked what methods were used to learn keyword searching, LUIS keyword help screens were indicated by 42.6% (89 of 209) of all undergraduates, 27.7% (10 of 36) of graduate students, and 59.5% (25 of 42) of faculty. Faculty are more likely than other groups to have used an option which is done independently and which does not have to be done in the library.

On question 22, where respondents were asked to check all statements about keyword help screens with which they agreed, a slight variation according to status for ISU respondents appears on the option, "their explanations are not clear." Only 30 ISU respondents agreed with this, and when looking at their status, one finds that 2/3 of them were underclassmen. One fifth were upperclassmen, and only 2 graduate students and 2 faculty check this response.

On question 23, which asks about how respondents come up with terms to do keyword searching, variations by status for ISU respondents are significant to .05 for the option "consult professor, reference books, or textbook." ISU upperclassmen were most likely to check this option--27.2% or 25 of 92. Next come ISU underclassmen at 18.6% or 19 of 102, then 11.1% or 4 of 36 graduate students, and only 8.5% or 3 of 35 faculty members.

A final interesting tendency appears, although it does not quite reach the point of significance. On question 26, respondents are asked to check the statement which most closely approaches how they feel about k= searching, as opposed to a=, t=, and s= searching. When looking at overall academic response, one finds that faculty response is very different from student response for the first and third statements. The response "keyword searching is usually superior to all other methods, and I use it most of the time" was chosen by 19.4% (39 of 201) of undergraduates and 17.6% (6 of 34) of graduate students, but only 2.5% (1 of 40) of faculty. The response "keyword searching is better when I want to find information on a subject, but I still use a= and t=searching when appropriate" varied little, with 107 or 53.2% of undergraduates checking it, 19 or 55.9% of graduate students, and 21 or 52.5% of faculty. The final statement, "I only use keyword searching as a last resort when I can't find something using the other search methods," varies again, with 27.4% or 55 undergraduates choosing it, and 26.5% or 9 graduate students, but 45% or 18 faculty selecting it. This bears out above results which indicate faculty are less receptive to keyword searching.

To summarize, quite a few variations can be found based on status in the area of keyword/Boolean searching. Faculty are less receptive to organized library instruction on it, use the keyword help screens more, are less likely to have used keyword/Boolean searching, tend to be more ignorant about it, use it less frequently, and tend more to see it as a last resort, although they may be reached better by current publicity than students and they profess to finding Boolean operators easier to learn. They are also less likely to correctly understand s= searching. These tendencies, when taken together, show a great need to educate the faculty more about keyword/Boolean searching.

Subject Area. The next factor to be studied as a basis for significant variation is subject area. Question 3 was labeled "Subject area at ISU," but for purposes of meaningful analysis, students at Rose-Hulman Institute of Technology were added to ISU technology respondents when correlations were done. Some of the numbers in each category are very small for some questions, and should be regarded with caution. The general breakdown of results is given in Table 9.

Table 9 Subject Area at ISU

Arts & Sciences - Science	43(10.8%)	Nursing	23(5.8%)
Arts & Sciences - Humanities	47(11.8%)	Technology	31(7.8%)
Arts & Sciences - Soc. Sci.	44(11%)	Not Applic.	56(14%)
Business	67(16.8%)	Unusable Ans.	3(.8%)
Education	64(16%)	Blank	3(.8%)
Hlth, Phys. Ed. & Recreation	19(4.8%)		

Percentages do not always equal 100% due to rounding.

The first significant variation based on subject area appears on question 9, about the type of LUIS search last done. (See Table 10.) Humanities people were the most likely group to have searched by author's name--43.5% of them; the next most likely was social sciences at 25%, then science at 22.5%. Only 1 of 23 HPER respondents did a title search. Three subject areas showed about 1/3 of their members doing title searches--social science, nursing, and technology. Science and humanities reported relatively little title searching. Business and HPER reported the highest percentages of their members doing topic word searches--32.3% and 23.5% respectively. Other groups showed about 15% searching topic words. Most of the subject areas showed about 40 to 45% of their members searching by LCSH, but humanities and social science differed by being low in this area. Humanities and social science showed the lowest amount of subject searching, when both topic words and LCSH were combined--41.3% and 42.5% respectively. Business showed the highest amount at 71%.

Table 10 Type of LUIS Search by Subject Area (Author's First Name and Pa of Title not at Beginning omitted due to very low response)

	Author	Title	Topic Words	LCSH
Science	9(22.5%)	6(15%)	6(15%)	17(42.5%
Humanities	20(43.5%)	4(8.7%)	7(15.2%)	12(26.1%
Social Science	10(25%)	13(32.5%)	5(12.5%)	12(30%)
Business	5(8.1%)	13(20%)	20(32.3%)	24(38.7%
Education	10(15.9%)	13(20.6%)	10(15.9%)	29(46%)
HPER	0	6(35.3%)	4(23.5%)	7(41.2%
Nursing	1(4.3%)	8(34.8%)	3(13%)	10(43.5%
Technology	5(9.8%)	15(29.4%)	8(15.7%)	21(41.2%

Rose-Hulman respondents included in Technology group.
Percentages do not always equal 100% due to rounding.

The next area of significant variation related to subject is in a response to question 13 about how the respondent found out about keyword searching--the option of library instruction class/workshop. Although the variation is significant only to .05, it probably does indicate which subject areas are being better reached by library instruction. Ten of 19 HPER respondents (52.6%) checked this option, as did 29 of 67 business respondents (43.3%) and 14 of 43 in science (32.6%). The other subject areas had less than 30% of their members choosing this option--18 of 64 (28.1%) in education, 6 of 23 (26.1%) in nursing, 11 of 44 (25%) in social science, 9 of 47 (19.1%) in humanities, and 9 of 52 (17.3%) in technology.

Another option from the same question is learning about keyword availability from the Welcome to LUIS screen. Significant variations appear in this response based on subject area. Some of the subject areas that did not tend to check library instruction as a method did check this area more, and one that did check library instruction a lot did not choose this as much. Thirty of 52 (57.7%) technology respondents chose this option, as did 25 of 47 (53.2%) humanities, 18 of 44 (40.9%) social science, and 26 of 64 (40.6%) of education. Only 2 of 19 (10.5%) HPER respondents chose this option. Others that did not follow this rough pattern as regards the earlier response were business (29 of 67, or 43.3%), nursing (6 of 23, or 26.1%) and science (11 of 43, or 25.6%).

There is a tendency to differ significant to the .05 degree among the 30 respondents from different subject areas who indicated they were not aware of keyword searching. Of 52 respondents in technology, none checked this option. Only 3 of 64 (4.7%) in education were unaware of keyword, as were 3 of 47 (6.4%) in humanities, 6 of 67 (9%) in business, and 4 of 44 (9.1%) in social science. In contrast, 5 of 23 (21.7%) in nursing were unaware of it, as were 3 of 19 (15.8%) of HPER and 6 of 43 (14%) in science. These numbers are, of course, small, but may show a tendency.

The next variation of significance appears in the option of library instruction classes at instructor request under question 14 about awareness of keyword instruction methods. In four subject areas, the percentage who are aware of library instruction is within 5% of the percentage who learned of keyword this way: HPER (11 of 19, or 57.9%), education (22 of 63, or 34.9%), social science (11 of 44, or 25%), and humanities (10 of 47, or 21.3%). The other subject areas did not seem to have a relation between these two responses; in two cases, fewer respondents said they knew of library instruction as a keyword instruction method than had learned of keyword through library instruction, which seems illogical--science (8 of 43, or 18.6%) and business (17 of 67, or 25.4%). The last two subjects had a more logical relation between the two separate options--more in nursing (12 of 23, or 52.2%) and technology (14 of 52, or 26.9%) knew of library instruction as a keyword instruction method than had learned of keyword in library instruction.

The next point at which subject area is connected with significant variation is on the second option under question 15--when asked what methods of additional instruction on keyword searching the respondent would use if it were available, 135 chose a microcomputer interface that makes keyword searching easier, and 125 of them were in a subject area. One might expect the technology group to embrace a computer-based solution to the greatest extent, but, in fact, 55.2% (37 of 67) in business picked this option--the highest percentage of all. Social science and technology followed, at 36.4% (16 of 44) and 35.6% (21 of 59), respectively. The rest of the percentages are in the twenties: 28.6% (12 of 42) of science, 28.6% (18 of 63) of education, 25.5% (12 of 47) of humanities, 21.7% (5 of 23) of nursing, and 21.1% (4 of 19) of HPER.

A subject-connected variation also appears in the eighth option under this question, peer tutoring. Only 39 people chose this option and only 32 were in a subject area, so the numbers were very small and should be seen as only indicative. The group with the highest percentage of its members interested in this option was social science (18.2%, or 8 of 44). Three others were about the same: nursing (17.4%, or 4 of 23), humanities (17%, or 8 of 47), and HPER (15.8%, or 3 of 19). The rest were much lower--less than 6%--that is, technology (5.8%, or 3 of 52), education (5%, or 3 of 63), business (3%, or 2 of 67), and science (2.4%, or 1 of 42). These groups seem less interested in an option that takes more time and does not involve technology.

There are no further subject-related variations until the keyword user part of the survey. There is a variation under question 21, about what methods were used to learn keyword searching, related to library instruction, as were two variations above. The results approximate those for the library instruction option for the question earlier in the survey about how the respondent learned about the availability of keyword searching, except in the case of nursing. Only 26.1% in nursing checked this option earlier, but 73.3%, or 11 of 15, said they used library instruction to learn keyword searching. The highest percentage group that checked this option was HPER, at 75%, or 9 of 12. Next, other than nursing, came business, at 47.1%, or 24 of 51, then science, at 44.4%, or 12 of 27, education, at 36.5%, or 19 of 52, technology, at 24.4%, or 10 of 41, social science, at 24.3%, or 9 of 37, and humanities, at 15.4%, or 6 of 39.

The final variation connected with subject, significant to the .05 degree, is in the answers to question 26, comparing k= searching to a=, t=, and s= searching. (See Table 11.) The people in science had the highest percentage that checked the first statement, which says they use keyword most of the time--33.3%, or 9 of 27. Business also tended to check this option more than other groups, at almost a quarter of them. Social science and nursing were low on this--no one in nursing checked it. The second option, which is about use of keyword for subject searching, but a= and t= when appropriate, generally showed responses that clustered around 50 - 55%, but 12 of 14 (85.7%) nursing respondents chose this option, as did 7 of 11 (63.6%) of those in HPER. In contrast, only 6 of 27 (22.2%) science respondents checked it. The final statement advocates use of keyword only as a last resort, and it was chosen at different levels by different subjects. The group that chose this to the greatest percentage was science--12 of 27 (44.4%), followed by humanities at 15 of 36 (41.7%). Science clusters at each end of the scale on this question. The areas that picked this at the lowest levels were nursing, at 2 of 14 (14.3%), and HPER, at 2 of 11 (18.2%).

Table 11 Comparison of k= to a=,t=,s= by Subject Area

	Use k= most	K= for Subject	K= Last Resor
Science	9(33.3%)	6(22.2%)	12(44.4%)
Humanities	4(11.1%)	17(47.2%)	15(41.7%)
Social Sciences	3(8.1%)	21(56.8%)	13(35.1%)
Business	12(24.5%)	27(55.1%)	10(20.4%)
Education	6(11.8%)	29(56.9%)	16(31.4%)
HPER	2(18.2%)	7(63.6%)	2(18.2%)

Nursing	0	12(85.7%)	2(14.3%)
Technology	6(16.2%)	21(56.8%)	10(27%)

Rose-Hulman respondents included in Technology group.
Percentages do not always equal 100% due to rounding.

In summary, there is no clear tendency toward consistent variation on the basis of subject area. A Borgman study cited above concluded that science and technology majors may tend to do better in online searching. This may be so at ISU, but they have overall no different attitudes toward keyword searching than other groups, and no better performance on a knowledge test. There is just as notable a tendency for business to embrace keyword searching, as there is for science and technology. There was some evidence that humanities was not as favorable towards it. Several of the significant variations tended to be in relation to awareness and use of library instruction, and the results on these questions may have been skewed, if some of the subject groups with smaller numbers just came out of a library instruction class.

Education Level. It became obvious during data analysis that the responses to the education level question were incorrect, and that the data was bad. This happened because the author failed to indicate that the respondent should check the level reached, not the level being worked on. Many who checked bachelors degree had not attained it, but were working on it; this could be determined by some other responses. This data has been ignored.

Age Range. There are quite a few differences based on age range, some of which are similar to the ones on status, so that in some cases, older respondents obviously may be the same as faculty. This cannot be assumed, however, since there are many nontraditional, returning students on campus and since some of the respondents were from off campus. For purposes of correlation, the Under 18 category was dropped, since it was so small, and the highest 3 categories, 41-50, 51-60, and 61 or above, were collapsed together. The basic numbers follow in Table 12.

Table 12 Age Ranges

Under 18	3(.8%)	41-50	25(6.3%)
18-22	216(54%)	51-60	20(5%)
23-30	60(15%)	61 or above	5(1.3%)
31-40	69(17.3%)	Blank	2(.5%)

Percentages do not always equal 100% due to rounding.

The first area in which there is a significant difference based on age, albeit only to .05, is in use of CD-ROMs. The 18-22 year olds had the lowest percentage of CD-ROM users--30.6% (66 of 216) of them had used it. Those who had used it next least were 31-40 year olds, at 34.8%, or 24 of 69. Twenty-three to thirty year olds had the second highest level at 41.7% (25 of 60), and 41 year olds and older had the highest percentage--50% (25 of 50) had used CD-ROMs. These results are similar to the ones for status.

A more significant difference appears in LUIS entry connected with age. The older the respondent, the more likely to search by author, and the less likely to do subject searching. (See Table 12.) The two youngest age ranges had only about 12% of their members searching by authors, versus over 24% of the 31 to 40 year olds and 40% of the 41 years or older. The percentages for title searching are consistently around 25% for the three younger age ranges, but dip to 13.3% for the oldest group. The youngest group is most likely to have searched by topic word, at

22.2% and the 31 to 40 year olds least likely, at 8.1%. The three youngest age ranges had all searched for LCSH at around 40%, but the oldest range showed only 31.1%. Combining both kinds of subject searching, one finds the following ranking: highest at 62% were 18-22 year olds, then at 59.7% 23-30 year olds, at 50% 31-40 year olds, and finally at 44.4% 41 years and older.

Table 12 Type of LUIS Search Used by Age Range (Author's First Name Part of Title not at Beginning omitted due to very low response)

	Author	Title	Topic Words	LCSH
18-22	27(12.8%)	47(22.3%)	48(22.7%)	83(39.3%
23-30	7(12.2%)	15(26.3%)	9(15.8%)	25(43.9%
31-40	15(24.2%)	16(25.8%)	5(8.1%)	26(41.9%
41 or older	18(40%)	6(13.3%)	6(13.3%)	14(31.1%

Percentages do not always equal 100% due to roundi

The next significant variation related to age appears on question 11, about whether or not the respondent has done keyword searching, and the results are somewhat similar to those for status. Those who can be presumed to be undergraduates, 18-22 year olds, had done keyword searching at the highest level--87% of them, or 188 of 216. The range that searched at the lowest rate, though, was 23-30 year olds at 65%, of 39 of 60. The 31-40 year olds had 73.9% of their members, or 51 of 69, having done keyword, and 70% of the oldest range, or 35 of 50, had done it. Around 70% of all the older groups had done keyword searching, versus almost 90% of the youngest group.

The next area where variation appears in relation to age is another area where results are similar to status, although only significant to .05. Older age ranges were less likely to have learned of keyword availability through library instruction classes (question 13). Seventy-one of 216 18-22 year olds

(32.9%) had learned of it this way, as had 20 of 60 23-30 year olds (33.3%). Only 17 of 69 31-40 year olds (24.6%) had learned of it this way, and 7 of 50 41 years or older respondents (14%).

The variations by age of those who learned of keyword through library announcements tends to be more significant, although the group of respondents that chose this option was small (35). Ten of 216 18-22 year olds (4.6%) checked this option, as did only 2 of 60 23-30 year olds (3.3%). Eleven of 69 31-40 year olds (15.9%) had seen library keyword announcements, as had fully 12 of 50 (24%) of the oldest range. These results are again similar to those on status.

Another option on question 13 also shows significant variation by age range--the Welcome to LUIS screen as a way of finding out about the availability of keyword searching. Those aged 18-22 checked this option at a rate of 48.1%, or 104 of 216. Thirty-one to forty year olds were next, at a rate of 36.2%, or 25 of 69. Twenty-three to thirty year olds had 19 of 60 choose this option, or 31.7%. Of those over 40, only 13 of 50, or 26% chose this option. This may indicate a tendency toward more frequent use by certain age groups, although age range did not show a significant variation on frequency of LUIS use. It could also be that younger users are more likely to actually read the Welcome to LUIS screen, since LUIS is less familiar to them. The keyword option was added when keyword came up, and long-time users may not have noticed it.

The next option on this question, "from a friend, professor, or person at the next terminal," also showed some variation based on age range, although only significant to .05. The oldest group, 41 or older, was very unlikely to check this option; only 2 of 50 did, or 4%. In contrast, 18-22 year olds chose this at a rate of 23.1%, or 50 of 216. The other two age groups were at a mid-point: 23-30 year olds at 9 of 60, or 15%, and 31-40 year olds at 13 of 69, or 18.8%. These results are similar to those on status at the undergraduate and faculty ends of the scale.

Analysis by age range of those who were unaware of keyword also produces significant variation, although it must be noted that only 33 respondents who indicated age chose this option. Fully 20% of those 41 or older were unaware of keyword searching, or 10 of 50. Next comes 23-30 year olds at 13.3%, or 8 of 60. Finally, 18-22 year olds and 31-40 year olds were least likely to check this option, at 5.1%, or 11 of 216, and 5.8%, or 4 of 69, respectively. These results also bear out those under status. The only option on question 13 that did not vary significantly by age was that of learning about keyword availability from a librarian.

On question 14, about which instruction methods on keyword/Boolean searching the respondent was aware of, the option of library workshops held once per semester showed variation significant to .05 for age range. Eighteen to twenty-two year olds were least likely to know of this option, at 15 of 216, or 6.9%, followed by 31-40 year olds, at 6 of 68, or 8.8%. The over 40 group was most likely to know of this option, at 20%, or 10 of 50, and 23-30 year olds were not far behind, at 16.9%, or 10 of 59. These results also reflect the analysis of this reponse based on status.

Comparatively few respondents knew of on-demand instruction appointments with librarians--only 31 people who gave their age--but 41.9%, or 13, of them were age 41 or over. This represented 26% of that age group. Ages 31-40 followed, at 11.8%, or 8 of 68. Only 5.1%, or 3 of 59, of those 23-30 knew of this option, as did 3.2%, or 7 of 216, of those 18-22. These results are similar to those on status.

Only one response to question 15 showed significant variation based on age range. "More printed handouts" was one of the options under this question about what keyword instruction methods the respondent would use if it were available. Those aged 23-30 were considerably less interested in this as a prospective instruction method--only 4 of 59 people, or 6.8%. Twenty percent of the 18-22 group, or 43 of 215, were interested in this, as were even higher percentages of the older two groups. Fourteen of fifty of those over 40 were interested in this, or 28%, as were 20 of 68 31-40 year olds, or 29.4%. It is impossible to say if everyone was aware of the fairly lengthy handout already available on keyword/Boolean; all that can be said is that there were no significant variations based on age or status for the earlier answer of "library announcements/handouts" as an available method of keyword instruction.

There are only two statements in question 16 about keyword/Boolean knowledge which show significant variation based on age range. The first statement, 16a, about keyword searching allowing a search for a word anywhere in LUIS, received less agreement as the respondents' ages rose. (See Table 13.) The youngest group, 18-22, had 165 of 210, or 78.6%, agree with this statement. Those 23-30 had 63.8% agreement with this, which dropped to 59.7% for those 31-40, and a low of 48.9% for those over 40. Generally the percentage that disagreed with the statement was low, around 10%, but the percentage that did not know ranged from 12.9% for 18-22 year olds, to 40.4% for those over 40. This was also a question that showed variation based on status.

Table 13 Answers to Question 16a by Age Range

	Agree	Disagree	Don't Know
18-22	165(78.6%)	18(8.6%)	27(12.9%)
23-30	37(63.8%)	2(3.4%)	19(32.8%)
31-40	37(59.7%)	6(9.7%)	19(30.6%)
41 or older	23(48.9%)	5(10.6%)	19(40.4%)

Percentages do not always equal 100% due to rounding.

The second statement, about keyword searching allowing searching for a phrase anywhere in LUIS, also showed variation according to age range, although only to the .05 level. (See Table 14.) Again, correct knowledge of this aspect of keyword searching drops with age, although the variation is not as great as in the first statement. Those aged 18-22 agreed with this statement at a rate of 58.7%, versus 54.4% of 23-30 year olds, 51.6% of 31-40 year olds, and 48.9% of those over 40. Only 2.1% of those over 40 disagreed with the statement, but a surprising 14.4% of 18-22 year olds did. Only 26.9% of the youngest group said they didn't know, up to 48.9% of those over 40. Again, results carry out the general trend of those on status, although it is notable that age range did not relate to significant variation on any more of question 16, but status showed such variation on five statements in all.

Table 14 Answers to Question 16b by Age Range

	Agree	Disagree	Don't Know

18-22	122(58.9%)	30(14.4%)	56(26.9%)
23-30	31(54.4%)	4(7%)	22(38.6%)
31-40	32(51.6%)	6(9.7%)	24(38.7%)
41 or older	23(48.9%)	1(2.1%)	23(48.9%)

Percentages do not always equal 100% due to rounding.

The next variation related to age range appears for question 18, on how often the respondent uses keyword searching on LUIS. (See Table 15.) Variation is significant only to the .05 level. Generally, the tendency is that the older the respondent, the less frequently he or she uses keyword searching. The tendency is most clear when one looks at the first two options, using keyword almost every time LUIS is used and more than half the times LUIS is used, as indicating frequent keyword use, and the last two, less than half the times LUIS is used and almost never, as indicating infrequent use. The incidence of frequent users drops rather dramatically the higher the age range. Lumping together the two more frequent categories, one finds that 66.1% of 18-22 year olds use keyword searching most of the time they use LUIS, and 46.6% use it almost every time they use LUIS. Those 23-30 do not show that large a drop; 63.2% of them use keyword most of the time, and 39.5% almost all the time. Only 50% of those 31-40 can be considered frequent users of keyword, though, but 37.5% still say they use it almost every time they use LUIS. Those over 40 have the lowest frequency of keyword searching: only 33.4% use it most of the time, and only 18.2% almost every time they use LUIS. These results again reflect those of status.

Table 15 Frequency of Keyword Searching Use by Age Range

	Almost Every Time	More than Half	Less than Half	Almost Ne
18-22	81(46.6%)	34(19.5%)	34(19.5%)	25(14.4%
23-30	15(39.5%)	9(23.7%)	10(26.3%)	4(10.5%
31-40	18(37.5%)	6(12.5%)	14(29.2%)	10(20.8%

41 or older	6(18.2%)	5(15.2%)	17(51.5%)	5(15.2%

Percentages do not always equal 100% due to rounding.

The next area of significant variation related to age range is in the perceived difficulty of learning the use of Boolean operators. (See Table 16.) This question was answered by circling a number on a scale of 1 to 4, very easy to very difficult. The results on this question do not show a clear trend in one direction based on age range; the youngest respondents and the oldest respondents seemed to find Boolean operators easiest to learn. Those 23-30 had the most trouble. The percentage in each group that considered Boolean operators very easy was around 20%, but more variation is found in the percentages that circled 2. Those 18-22 and 41 or older chose this most, at 38.6% and 52.2% respectively. Those 23-30 chose this only 21.8% of the time. A whopping 41.8% of those 23-30 circled 4 for very difficult. Only 4.3% of those 41 or older circled this response. When those who circled 1 or 2 are lumped together, 73.9% of those over 40, 57.2% of those 18-22, 52.9% of those 31-40, and 40% of those 23-30 chose these options. These results are somewhat similar to those on status, but, again, it is difficult to say if those older really are more informed about Boolean logic already, or if they just do not admit they have difficulty. Those 18-22 may be more knowledgeable already based on computer experience and/or being closer in time to their courses on Boolean logic.

Table 16 Difficulty of Learning Boolean Operators by Age Range

	1(Very Easy)	2	3	4(Very Difficult)
18-22	27(18.6%)	56(38.6%)	42(29%)	20(13.8%)
23-30	10(18.2%)	12(21.8%)	10(18.2%)	23(41.8%)
31-40	8(23.5%)	10(29.4%)	11(32.4%)	5(14.7%)
41 or older	5(21.7%)	12(52.2%)	5(21.7%)	1(4.3%)

Percentages do not always equal 100% due to rounding.

The next variation according to age range, significant to .05, comes on the option "library instruction class/workshop" under question 21 about what methods were used to learn keyword searching. The youngest age range, 18-22, was more likely to have checked this option; 43.2%, or 76 of 176, of them did. The older age ranges all checked this option in the percentage range: 23-30 at 25.6%, or 10 of 39, 31-40 at 22.9%, or 11 of 48, and 41 or older at 29.4%, or 10 of 34. Based on the nature of ISU's instruction program, and assuming those 18-22 are undergraduates, this variation is understandable.

The next variation also arises on a possible response to this question--"friend or someone at the next terminal" as a source of keyword instruction. The group with the highest percentage responding affirmatively to this was 23-30 year olds, with 33.3%, or 13 of 39. Eighteen to twenty-two year olds had 32 of 176 check this, or 18.2%. The two older groups were less likely to choose this option: 12.5% of 31-40 year olds, or 6 of 48, and only 1 of those over 40, out of 34, or 2.9%.

Question 22 is about the keyword help screens, and the only response on this question which shows significant variation (to the .05 level) when analyzed by age range is the option, "they are very useful to me." The middle two age ranges tended more to check this option: 51.3% of the 23-30 year olds, or 20 of 39, and 39.6% of the 31-40 year olds, or 19 of 48. Eleven of 34 of those over 40, or 32.4%, checked this, but only 26.1%, or 46 of 176, of those 18-22 did. This may show some slight relation to a variation that appeared under status, where undergraduates were more likely to think that keyword help screen explanations were not clear.

Further variation according to age range does not appear until almost the end of the questionnaire. Question 26, comparing k= searching to a=, t=, and s= searching, shows significant variation on this factor; attitudes toward keyword searching seem to become less positive over the age range, although this pattern does not fit exactly, since 23-30 year olds are most positive towards it. (See Table 17.) Ten of 36 of them say keyword searching is superior, or 27.8%, and 22 more, or 61.1%, say they prefer it for subject searching. Those 18-22 and 31-40 year olds show a pattern similar to each other; the most difference is that only 8.9% of 31-40 year olds take the most positive attitude towards keyword searching, versus 18.8% of 18-22 year olds. Those 41 or older take a noticeably more negative attitude--50% said they only use keyword as a last resort, and only 3.1% see it as superior. These results are similar to those on status.

Table 17 Comparison of Keyword Searching to a=,t=,s= by Age Range

	Keyword Superior	Keyword Best for Subject	Keyword Last Res
18-22	32(18.8%)	88(51.8%)	50(29.4%)
23-30	10(27.8%)	22(61.1%)	4(11.1%)
31-40	4(8.9%)	26(57.8%)	15(33.3%)
41 or older	1(3.1%)	15(46.9%)	16(50%)

Percentages do not always equal 100% due to rounding.

Variation according to age range, to the .05 level, also appears on the final question on the questionnaire, about what reason most closely applies when the respondent's keyword search is unsuccessful. (See Table 18.) Those 23-30 were more likely than other groups to think that their topic was too specific; 1/3 of them checked this. Only 12% of those over 40 checked this option; their response tended to be lower than other groups also to the possibility that they were not finding the right words for their topic--40% of them said this, as opposed to 58.5% of those 18-22 and 57% of those 31-40. The two older ranges tended to have higher responses to the option of not knowing enough about keyword searching: 24% of those over 40, and 22.5% of those 31-40. Finally, those over 40 had a notably higher percentage, 24%, that checked the statement that LUIS doesn't list material on their topic versus no more than 8% of any other group (18-22 year olds). Those over 40 are probably identifiable with faculty generally, and they seem to appreciate that they need to know more about keyword searching, but they also may be more sure about what the collection contains.

Table 18 Reason for Unsuccessful Keyword Search by Age Range

	Too Specific Topic	Not Right Words	Don't Know Enough about Keyword	No Material on LUIS
18-22	39(23.3%)	95(58.3%)	16(9.8%)	13(8%)
23-30	11(33.3%)	17(51.5%)	4(12.1%)	1(3%)
31-40	6(15%)	23(57.5%)	9(22.5%)	2(5%)
41 or older	3(12%)	10(40%)	6(24%)	6(24%)

Percentages do not always equal 100% due to rounding.

To summarize results by age range, younger respondents, especially those 18-22, were less likely to have searched CD-ROMs, more likely to search LUIS for a subject, more likely to be aware of keyword searching, and more likely to have done keyword searching. They tended to be more likely to have learned about keyword searching from library instruction classes, the Welcome to LUIS screen, and from another non-library person, and less likely to have heard about it from a library announcement. Younger respondents were unlikely to be aware of library workshops held once per semester and on-demand appointments with librarians as keyword instruction methods. They were more often right on the first two agree/disagree statements about keyword searching--that keyword searching could be used to locate words and phrases anywhere on LUIS. They report using keyword searching more often, and having more difficulty learning Boolean operators. They were more likely to have received instruction about keyword instruction through library instruction classes and from a friend or someone at the next terminal. They evidenced a more positive attitude toward k= searching, as opposed to a=, t=, and s= searching, and they were more likely to think that their unsuccessful keyword searches were due to not finding the right words for their topic. The older groups, particularly those over 40, were generally the inverse of these findings, and they had a greater tendency to attribute unsuccessful keyword searches to LUIS not listing material on their topic. Many of these findings echo those on status, if one identifies 18-22 year olds with undergraduates and those over 40 with faculty.

Frequency of LUIS Use. The next respondent characteristic to be studied is reported frequency of LUIS use. In question 6, respondents were asked, "Before today, how often have you generally used LUIS?" Numbers for different replies are given in Table 19.

Table 19 Frequency of LUIS Use

Several Times a Week	91(22.8%)	Only a Few Times	64(16
No More than Several Times a Month	176(44%)	Never	9(2.
No More than Several Times a Year	59(14.8%)	Unusable Answer	1(.3

Percentages do not always equal 100% due to roundi

There is significant variation on the correlation between frequency of LUIS use and length of experience with LUIS, but the results are conflicting and show no clear trend. (See Table 20.) Almost a third of those who use LUIS most frequently have used for 0-1 years, as have 65% of those who have used it only a few times and, of course, 100% of those who have never used it. Only 8.5% of those who have used it no more than several times a year have 0-1 years of LUIS experience. Over 40% of this group have used it 1-2 years, versus 17.7% of those who have used it only a few times. The group of respondents that have used LUIS no more than several times a year has the highest percentage--over 50%--of members that have used LUIS 3-5 years. This may reflect earlier results that showed faculty as using LUIS less frequently, but probably tending to have more years of experience with it.

Table 20 Years of LUIS Experience by Frequency of LUIS Use

	0-1 Years	1-2 Years	3-5 Years
Several Times/Week	28(30.8%)	22(24.2%)	41(45.1%)
Several Times/Month	42(23.9%)	63(35.8%)	71(40.3%)
Several Times/Year	5(8.5%)	24(40.7%)	30(50.8%)
Only a Few Times	40(65%)	11(17.7%)	11(17.7%)
Never	9(100%)	0	0

Percentages do not always equal 100% due to rounding.

Frequency of LUIS use also related to lack of use of any other computer systems, the first option on question 8, about previous use of computers. Only 37 respondents checked this option, but 27% (10) of them used LUIS a few times a week. Twelve of them (32.4%) used it only a few times ever, but none of those who said they'd never used LUIS had not used other computers before. Ten of 91 of the most frequent users of LUIS, or 11%, had not used other computer systems, as was true of 7 of 176, or 4%, of those who used LUIS no more than several times a month. Eight of 59, or 13.6%, of those who used LUIS no more than several times a year had not used other computers. Twelve of 64, or 19.8%, of those who had used LUIS only a few times had not used other computer systems. There is variation related to use of no other computer systems, but it shows no clear trend.

The next variation related to frequency of LUIS use is prior use of CD-ROM databases. Over half (71 of 140) of those who had used CD-ROM databases used LUIS several times a month, and another 25.7% (36) used LUIS several times a week, so over 75% of those who had used CD-ROM databases used LUIS fairly frequently. Those who were infrequent users of LUIS had low percentages of CD-ROM use--only 11.1% (1 of 9) of those who had never used LUIS had used CD-ROM databases, and 15.6% (10 of 64) of those who had used LUIS only a few times had searched CD-ROMs. In contrast, 37.3% (22 of 59) of those who used LUIS no more than several times a year had used CD-ROMs, as had 40.3% (71 of 176) of those who used LUIS no more than several times a month. Thirty-six of 91 (39.6%) of those who used LUIS a few times a week had used CD-ROMs. Those who tend to search LUIS more frequently and have searched CD-ROMs may simply be people who are in the library more often.

Forty-one respondents reported that had used an OCLC terminal before, and this related to their frequency of LUIS use. (These would not have been library workers since they were not issued the questionnaire, but the general education library science course includes a module on OCLC use, which may account for many of the users.) Twenty-one (51.2%) of them used LUIS a few times a week, and 16 of them (39%) used LUIS no more than several times a month, so almost 90% of the OCLC users used LUIS fairly frequently. Twenty-one of 91 (23.1%) of the most frequent

LUIS users had searched OCLC. The percentages of OCLC use dropped with frequency--16 of 176 (9.1%) of those who used LUIS no more than several times a month used OCLC, as did only 2 of 59 (3.4%) of those who used LUIS no more than several times a year, 2 of 64 (3.1%) of those who had used LUIS only a few times, and none (of 9) of those who had never used LUIS. Those who had used OCLC tended to be more frequent LUIS users.

There was also variation related to frequency of LUIS use on the option of having used a computer at school for a non-computer course, although the variation was only significant to .05. The two more frequent categories of LUIS use accounted for 74.6% of these computer users. Fifty-one of 177 school computer users, or 28.8%, used LUIS a few times a week, and another 81 (45.8%) used LUIS no more than several times a month. The percentage of users of school computers for non-computer courses dropped steadily as frequency of LUIS use decreased. The 51 most frequent LUIS users, of 91, who were school computer users, composed 56% of that group; the 81 next most frequent users, of 176, who were also school computer users, formed 46% of that group. Twenty-four of 59, or 40.7%, of those who used LUIS no more than several times a year used school computers for non-computer courses. Only 18 of 64, or 28.1% of those who had just used LUIS a few times were school computer users, as were only 3 of 9 (33.3%) of those who had never used LUIS. The tendency on this option is for the more frequent LUIS users to have used school computers for a non-computer course. Interestingly enough, there was no significant variation by LUIS use frequency on the option of use of a school computer for a computer course--that is, with those who were presumably even more computer literate.

A variation related to frequency of LUIS use, significant to .05, appears on question 10, where users are asked about their expectations of a subject search on a topic; it shows no clear trend, however. There are two options; the first is "I like to retrieve just a few, on-target materials, even if I might be missing some relevant items," and the group that agreed with this most was those who used LUIS no more than a few times a year--25 of 56, or 44.6%, of them said this. (Of overall respondents, 27.8% agreed with this, as will be discussed later.) The second option is "I like to get a long list of related materials so I can go through them on my own, even if I have to look through a lot of things I don't use," and the two groups most frequently using LUIS chose this option more in line with the overall results, 69.5%. The most frequent users chose this option 71.3% of the time, for 65 of 91 of them; the next most frequent users chose it 73.5% of the time, for 125 of 170. The two groups that had used LUIS least frequently or not at all tended to agree with the second statement more often than the other groups--49 of 62, or 79%, of those who had used LUIS only a few times agreed with it, as did 8 of 9, or 88.9%, of those who had never used LUIS. This might be expected since the second statement seems to show a more cautious approach to subject searching that might go along more with less frequent use of LUIS, but the "middle" frequency group is something of an anomaly.

There is a not unexpected significant variation between LUIS frequency groups on question 11 about whether the respondent has done a keyword search before. The tendency to have done a keyword search drops steadily with less frequent LUIS use. Those who say they search LUIS a few times a week had 82 of their 91 members, or 90.1%, having done keyword searching. Of those who searched LUIS no more than a few times a month, 83%, or 146 of 176 had done a keyword search, as had only 41 of 59, or 69.5%, of those who searched it no more than a few times a month. Although all this is not surprising, it is perhaps surprising that even those who had searched LUIS only a few times had done keyword searching to the extent of 68.8%, or 44 of 64 of these respondents. Four of 9, or 44.4%, of those who had never searched LUIS before that day had still done a keyword search.

There is also a significant difference on the next question, question 12, about whether the respondent plans to do a keyword search in the future. (See Table 21.) The most frequent users of LUIS were much more likely than other groups to say they planned to use keyword again--over 90% said this. Generally, the lower the frequency of LUIS use, the less likely the respondent was to plan to use keyword searching again. The steady drop was interrupted slightly by those who had searched LUIS only a few times; a higher percentage of them planned to do a keyword search again than those who searched LUIS a few times a year. The less frequent the use of LUIS, the more likely the respondent was to say s/he did not know whether keyword would be used again--a logical development if the less frequent users were perhaps not even certain they would use LUIS again. There was not much difference between groups on the percentage of those who said they did not plan to do a keyword search in the future.

Table 21 Future Keyword Searching Plans by Frequency of LUIS Use

	Yes	No	Don't Know
Several Times/Week	82(90.1%)	3(3.3%)	6(6.6%)
Several Times/Month	139(79.4%)	3(1.7%)	33(18.9%)
Several Times/Year	37(62.7%)	1(1.7%)	21(35.6%)
Only a Few Times	43(67.2%)	3(4.7%)	18(28.1%)
Never	4(44.4%)	0	5(55.6%)

Percentages do not always equal 100% due to rounding.

Question 14, about awareness of keyword instruction methods, showed variation significant to .05 on the first option, "library handouts/announcements," related to frequency of LUIS use. Generally, the more frequent the use of LUIS, the more likely the respondent was to know about library announcements/handouts as a source of keyword searching instruction. Those who use LUIS a few times a week were aware of handouts at a rate of 45.1%, or 41 of 91. Those who use LUIS no more than several times a month were aware at a rate of 32.6%, or 57 of 175. Seventeen of 59, or 28.8%, of those who use LUIS no more than several times a year were aware of this option. Twelve of 64, or 18.8%, of those had used LUIS only a few times were aware of this instruction method, as were 2 of 8, or 25%, of those who had never used LUIS before.

Awareness of the keyword help screens varied significantly according to frequency of LUIS use, although the trend shown is a bit diluted. The most frequent users of LUIS were, not surprisingly, the most aware of keyword help screens--62 of 91, or 68.1%. The next most frequent users were aware at a rate of 52%, or 91 of 175. Those who used LUIS no more than several times a year were more aware, however, than the slightly more frequent users--61%, or 36 of 59. The two least frequent LUIS user groups were aware of keyword help screens at a rate of 25%--16 of 64 of those who had used LUIS only a few times, and 2 of 8 of those who had never used LUIS before. Overall, the results are not unexpected, but it should also be noted that almost 32% of those who use LUIS several times a week did not know about keyword help screens.

Frequency of LUIS searching was also associated with not being aware of any keyword searching instruction methods, the last option on question 14, with variation significant to .05. There is a slight tendency for less frequent users of LUIS to be more likely to be unaware of any keyword searching instruction methods. Nine of 73, or 12.3%, of those who were unaware of any keyword searching library instruction methods searched LUIS several times a week, versus 82 of 324, or 25.3%, of the rest of the respondents. Thirty-six, or 49.3%, of those unaware of any keyword searching library instruction methods searched LUIS no more than several times a month, versus 139, or 42.9%, of the others. Eight, or 11%, of the "unaware" group searched LUIS no more than several times a year, versus 51, or 15.7%, of the others. Sixteen, or 21.9%, of the "unaware" group had searched LUIS only a few times, versus 48, or 14.8%, of the others. Four, or 5.5%, of the "unaware" group had never searched LUIS, versus 4, or 1.2%, of the others. Over 27% of the "unaware" group had searched LUIS only a few times, or never, versus 16% of the rest of the respondents. Only half as high a percentage of the "unaware" group searched LUIS several times a week as the rest of the respondents.

Question 15 is about which instruction methods the respondent would use for keyword searching, if available, and the option of more descriptive error messages was chosen at significantly different rates by those who use LUIS at different frequencies. These different rates do not show a clear tendency, however. Those who use LUIS no more than several times a month and those who use LUIS no more than several times a year were most likely to choose this option. The second most frequent users chose this option at a rate of 35.4%, or 62 of 175, while the third most frequent users chose it at a rate of 36.2%, or 21 of 58. Only 23 of 90, or 25.6%, of those who use LUIS several times a week were interested in this method. At the other end of the frequency scale, those who had used LUIS only a few times chose this method of instruction at a rate of 14.1%, or 9 of 64. Only 1 of 8 of those who had never used LUIS (12.5%) chose this option. It would be difficult to speculate on the meaning of this variation.

Only 28 people thought they would use more library instruction classes as a method of keyword instruction, but a significant number of them were users who had used LUIS only a few times. Twelve of the positive respondents, or 42.9%, had used LUIS only a few times. Of 64 people who had used LUIS only a few times, those 12 composed 18.8%. Two of 8 of those who had never used LUIS (25%) also wanted more classes in keyword. Those who used it any more frequently than these two groups were not that interested in more library instruction classes. None of 58 people who used LUIS no more than several times a year were interested in this option. Only 6 of 175 (3.4%) of those who used LUIS no more than several times a month were interested, as were only 8 of 90 (8.9%) of those who used LUIS a few times a week. All in all, this was a low response on all the groups' parts to the idea of more library instruction.

Frequency of use had a relationship to correctness of answers on three statements on question 16, the test of keyword knowledge. The first statement, about keyword searching allowing access to a word anywhere in LUIS, showed significant variation when frequency of LUIS use was examined. (See Table 22.) The less frequently someone used LUIS, the less likely s/he was to agree with the statement (get it right) and the more likely to say s/he did not know. The percentage dropped steadily, from those who use LUIS a few times a week agreeing at a rate of 79.8%, to those who had used LUIS only a few times, at a rate of 61.7%, to those who had never used LUIS before, at a rate of 12.5%. The percentage of those who said they didn't know, as opposed to disagreeing, rose from 10.1% of the most frequent LUIS users to a third of those who had used it just a few times and half of those who had never used it. Frequency of LUIS use is obviously associated with greater keyword knowledge in this area.

Table 22 Answers to Question 16a by Frequency of LUIS Use

	Agree	Disagree	Don't Know
Several Times/Week	71(79.8%)	9(10.1%)	9(10.1%)
Several Times/Month	119(70.4%)	16(9.5%)	34(20.1%)
Several Times/Year	35(64.8%)	3(5.6%)	6(29.6%)
Only a Few Times	37(61.7%)	3(5%)	20(33.3%)
Never	1(12.5%)	3(37.5%)	4(50%)

Percentages do not always equal 100% due to rounding.

The second statement, about keyword searching allowing access to a phrase anywhere in LUIS, also showed significant differences based on this variable. (See Table 23.) Answers to this question follow the same pattern as with the statement discussed above--rate of agreement drops with decreasing frequency of use, and uncertainty--not knowing--rises. Seventy-three percent of the most frequent users of LUIS agreed with the statement, and only 15.7% said they did not know. Only 36.7% of those who had used LUIS just a few times agreed with the statement, and fully half said they did not know. Two of 8 of those who had never used LUIS agreed with the statement, and 4 of them didn't know. This echoes the pattern set above.

Table 23 Answers to Question 16b by Frequency of LUIS Use

	Agree	Disagree	Don't Know
Several Times/Week	65(73%)	10(11.2%)	14(15.7%)
Several Times/Month	95(56.9%)	19(11.4%)	53(31.7%)
Several Times/Year	26(49.1%)	3(5.7%)	24(45.3%)
Only a Few Times	22(36.7%)	8(13.3%)	30(50%)
Never	2(25%)	2(25%)	4(50%)

Percentages do not always equal 100% due to rounding.

The only other agree/disagree statement that shows significant variation based on frequency of LUIS use is 16i, about keyword searching truncation using the "$." (See Table 24.) Results for this statement do not quite as clearly bear out the idea that more frequent LUIS use leads to somewhat greater keyword knowledge, since those who use LUIS no more than several times a month got the question right (agreed with the statement) at a higher rate than those who used LUIS several times a week. More of the most frequent LUIS users also professed not to know whether the statement was true. The percentages are not widely disparate, though, and the other three, lower frequency groups clearly did not do as well on this question. In addition to not agreeing with it at nearly as high a rate, they tended to show more uncertainty about it overall; more of them did not know enough to agree or disagree. Since frequency of LUIS use only seems to have made a difference on three of ten statements, however, it would be difficult to credit it with an overwhelming influence on keyword knowledge.

Table 24 Answers to Question 16i by Frequency of LUIS Use

	Agree	Disagree	Don't Know
Several Times/Week	36(41.4%)	4(4.6%)	47(54%)
Several Times/Month	75(46.6%)	10(6.2%)	76(47.2%)
Several Times/Year	16(30.8%)	2(3.8%)	34(65.4%)
Only a Few Times	10(16.7%)	5(8.3%)	45(75%)
Never	2(28.6%)	0	5(71.4%)

Percentages do not always equal 100% due to rounding.

The next question on which frequency of LUIS use seems to relate to a significant difference is question 19, about the difficulty of learning keyword searching. (See Table 25.) There is a demonstrable tendency for those who use LUIS more frequently to consider keyword searching easier to learn. The most frequent LUIS user group had the greatest percentage of respondents rate keyword easiest to learn, except for those who had never used LUIS, and they were a very small group--only 4 in all. The percentage falls for the next most frequent users of LUIS, then for those who use it no more than several times a year; it steadies out for those who have only used LUIS a few times. The only group that had a substantial percentage of members that gave keyword search learning a 3 or 4, for very difficult, were those that had only used LUIS a few times; the three more frequent user groups tended more to chose ratings 1 or 2.

Table 25 Ease of Keyword Learning by Frequency of LUIS Use

	1(Very Easy)	2	3	4(Very Difficult)
Several Times/Week	42(54.5%)	25(32.5%)	10(13%)	0
Several Times/Month	54(40.9%)	55(41.7%)	22(16.7%)	1(.8%)
Several Times/Year	11(29.7%)	21(56.8%)	3(8.1%)	2(5.4%)
Only a Few Times	12(30%)	16(40%)	9(22.5%)	3(7.5%)
Never	3(75%)	0	0	1(25%)

Percentages do not always equal 100% due to rounding.

One option under question 21, about methods used to learn keyword searching, shows variation significant to the .05 level when frequency of LUIS searching is examined. The fourth option, "library instruction class/workshop," received replies in a rather erratic fashion based on LUIS use frequency. Eighteen of 79, or 22.8%, of those who used LUIS several times a week had used library instruction classes to learn keyword, a lower percentage than all the other groups. Those who used LUIS no more than several times a month had used library instruction for learning keyword searching at a rate of 41.8%, or 56 of 134, as had 31.7%, or 13 of 41, of those who used LUIS no more than several times a year. Twenty of 42, or 47.6%, of those who only used LUIS a few times checked this option, as did 1 of 4 of those who had never used LUIS. There is a fairly clear indication that those who use LUIS more frequently are less likely to have used library instruction to learn keyword.

Frequency of LUIS use also related to a significant difference in replies to the next option on the same question, "information desk librarian assistance," although it must be kept in mind that only 34 chose this option. The less frequent LUIS users are more likely to have used information desk librarian assistance to learn keyword searching. Only 7 of 79, or 1.3%, of those who use LUIS several times a week had used this method, and 9 of 134, or 6.7%, of those who used LUIS no more than several times a month. Of those who used LUIS no more than several times a year, 19.5%, or 8 of 41, had received assistance from the information desk librarian in learning keyword searching, as had 19%, or 8 of 42, of those who had only searched LUIS a few times, and 2 of 4 of those who had never used LUIS before. Although the numbers are small, it does seem logical that those who used LUIS less frequently might be more likely to seek information desk assistance.

The final response that showed some variation related to frequency of LUIS use, significant to .05, was the fifth option on question 23, about how the respondent comes up with terms to use in keyword searching; this option is "use Library of Congress Subject Headings (big red books.)" The results do not show a clear tendency, but they indicate that those that use LUIS several times a week and those that use it no more than several times a year are most likely to use LCSH as a source for keyword terms. Twenty of 79, or 25.3%, of the first group made this response, as did 10 of 41, or 24.4%, of the third most frequent user group. Those who use LUIS no more than several times a month chose this option at a lower rate--13.8%, or 18 of 135--as did those who had only used LUIS a few times, at 7.1%, or 3 of 42. No one who had never used LUIS before chose this option.

To summarize findings related to frequency of LUIS searching, there was something of a tendency for less frequent users to have used LUIS for longer, and for less freqent LUIS users to have had no prior computer experience. There was a clearer tendency to frequent LUIS users to have used CD-ROMs, OCLC, and a computer at school for a non-computer course. There was something of a tendency for less frequent LUIS users to prefer recall to relevance in subject searching. The more frequent LUIS user was more likely to have done keyword searching and to plan to do it in the future, as well as being more aware of library handouts and keyword help screens as sources of keyword instruction.

These users were less interested in more library instruction classes and more descriptive error messages as future instruction methods. They showed somewhat more knowledge than less frequent users on 3 of 10 statements about keyword searching. They also professed to find keyword searching easier to learn than did less frequent users. They were less likely to have used library instruction classes or information desk assistance to have learned keyword searching. They were somewhat more likely to use LCSH as a source of keyword search terms. Most of these variations are not surprising, but it is perhaps surprising that there were not more variations based on frequency of LUIS use.

Years of LUIS Experience. Length of LUIS experience had comparatively few variations that it correlated with--only four significant to the .01 level and five to the .05 level. It made surprisingly little difference in the other factors measured. The raw numbers are given in Table 26.

Table 26 Years of LUIS Experience

0-1 Years	124(31%)	3-5 Years	154(38.5%)
1-2 Years	120(30%)	Blank	2(.5%)

Years of LUIS experience correlates positively with whether or not the respondent has had CD-ROM experience. The greater the length of LUIS experience, the more likely the respondent was to have used CD-ROMs. Only 23 of 124, or 18.5%, of those who had used LUIS for 0-1 years had used CD-ROMs, whereas the percentage rises for those who had searched LUIS for 1-2 years to 37.5%, or 45 of 120. Those who had used LUIS longest were most likely to have searched CD-ROMs; 71 of 154, or 46.1% had. The same type of explanation may applied to this as was mentioned under frequency of LUIS experience--those who have used LUIS longer have had more chance to be exposed to and use the CD-ROMS.

The next variation, significant to .05, related to years of LUIS experience is on question 13, about how the respondent found out about keyword searching availability. The third option is "from a library announcement," which 35 people checked. There was not much difference between those who had used LUIS 0-1 years--6 of 124, or 4.8%--and those who had used it 1-2 years--8 of 120, or 6.7%. A noticeably higher percentage of those who had used LUIS 3-5 years learned of keyword searching through a library announcement, though: 21 of 154, or 13.6%. Obviously, these people may be faculty and/or people who have been on campus longer and have had a greater chance to be exposed to library announcements. These people would have been around when the campaign to introduce keyword was done, although some of those who chose 1-2 years may have been there, too.

The next significant variation related to length of LUIS experience appears on an option for question 15, about what keyword instruction methods the respondent would use if they were available. The fifth option, for more library instruction classes, was much more likely to be chosen by those who had had the shortest length of LUIS experience, although it must be noted that only 28 people chose this option at all. Twenty of them, or 71.4%, had used LUIS only 0-1 years; this formed 16.3% of the 123 overall who had used LUIS this amount of time. Only 6 of 118 (5.1%) of those who had used LUIS 1-2 years chose this option, as did a mere 2 of 153 (1.3%) of those who had searched LUIS longest. Those who had used LUIS the least amount of time felt in greatest need of library instruction, and, since probably many of them had also just started on campus, they tended to think in terms of library instruction more often than those who had been around longer.

Length of LUIS experience made no significant difference on any responses to question 16, where keyword knowledge was tested. The next point at which it did make a difference was on reasons for not having used keyword searching; it was the first variable to show difference on this question. Since very small numbers were being dealt with, however, the results should be looked at with caution. (See Table 27.) Some noteworthy points when looking at respondents' reasons for not doing keyword searching include that no one with 1-2 years experience said keyword searching is too difficult to learn, as opposed to 6.7% for the more experienced and 10% for the less experienced. The only people who said keyword searching takes to long to learn had been using LUIS for 3-5 years. A noticeably higher percentage of those who had used LUIS 1-2 years said that other forms of searching are adequate for them than did the other two groups. A comparatively high percentage of those with the longest LUIS experience said they didn't search often and would forget how to do keyword searching. Understandably, a comparatively high percentage of the least experienced group said that they hadn't had a chance to go to a library instruction session on keyword searching. No one with 3-5 years of LUIS experience said that there wasn't staff available to help them. A surprisingly high percentage of the most experienced LUIS searchers said they were not aware of keyword searching at all--a higher percentage than the less experienced groups. This would seem to reinforce speculations earlier in this paper that faculty are the least aware of keyword searching, since many of those with 3-5 years LUIS experience are faculty. Finally, the only LUIS experience group had any members that said that keyword searching response time was too slow were the 1-2 years group.

Table 27 Reasons for Not Using Keyword Searching by Length of LUIS Expe ence

	0-1 Years	1-2 Years	3-5 Years
It is too difficult to learn.	4(10%)	0	3(6.7%)
It takes too long to learn.	0	0	3(6.7%)
I don't need to; other forms of searching are adequate for me.	10(25%)	13(40.6%)	10(22.2%)
I don't search very often, so I wouldn't remember how to do it.	2(5%)	3(9.4%)	6(13.3%)
I haven't been able to go to a library instruction session on it.	8(20%)	1(3.1%)	3(6.7%)
There hasn't been staff available to assist me.	2(5%)	2(6.3%)	0
I wasn't aware of this form of searching at all.	14(35%)	10(31.3%)	20(44.4%)
Its response time is too slow.	0	3(9.4%)	0

Percentages do not always equal 100% due to rounding.

Years of LUIS experience makes a significant difference in the responses on question 20, where the respondent is asked to rate the difficulty of learning Boolean searching on a scale from 1 (very easy) to 4 (very difficult.) (See Table 28.) The results do not show a really clear tendency, but generally those with fewer years of LUIS experience consider learning Boolean searching more difficult. Only 45.4% of those with 0-1 years of LUIS experience circled 1 or 2, as opposed to 61.3% of those with 1-2 years and 68.2% of those with 3-5 years. What muddies the waters a bit is that just as many of those with 1-2 years of LUIS experience circled 3 as did those with 0-1 years, and a slightly higher percentage of those with 3-5 years experience circled 4 than did those with 1-2 years experience. These differences are not huge, though.

Table 28 Difficulty of Learning Boolean by Length of LUIS Experience

	1(Very Easy)	2	3	4(Very Difficult)
0-1 Years	8(10.7%)	26(34.7%)	25(33.3%)	16(21.3%)
1-2 Years	15(20%)	31(41.3%)	25(33.3%)	4(5.3%)
3-5 Years	27(30.7%)	33(37.5%)	20(22.7%)	8(9.1%)

Percentages do not always equal 100% due to rounding.

Under question 21, about methods used to learn keyword searching, the option "LUIS keyword help screens" shows variation related to length of LUIS experience significant to .05. Only 30 of 93, or 32.3%, of those who had used LUIS only 0-1 years checked this option, as opposed to 46 of 94, or 48.9%, of those with 1-2 years LUIS experience and 51 of 112, or 45.5%, of those with the longest experience. This fits with earlier results, where a higher percentage of faculty tended to check this option also.

The next variation related to years of LUIS experience comes under question 23, about how terms are developed for keyword searching, on the option of consulting a professor, reference book, or textbook; it is only significant to .05. The group that did this to the greatest extent was the group with 1-2 years experience: 25 of 94, or 26.6%. The other two groups used this method at rates similar to each other--14%, or 13 of 93, of those with 0-1 years experience, and 13.4%, or 15 of 112, of those with 3-5 years experience. Perhaps those who have just started using LUIS do not think of these methods, and those with more experience do not bother to do them!

Another difference to the .05 level arises on another option for the same question--consulting LCSH--when LUIS experience is analyzed. Those with up to 2 years experience all checked this option at roughly the same rate: 11 of 93, or 11.8%, of those with the shortest experience, and 12 of 94, or 12.8%, of those with 1-2 years experience. The rate jumps, however, when those with 3-5 years of experience are analyzed; 28 of 112, or 25%, of these respondents checked this option.

The final variable that shows significant difference, to the .05 level, on years of LUIS experience is question 26, about comparing k= searching to a=, t=, and s= searching. (See Table 29.) Those with 0-1 and 1-2 years of LUIS experience agreed at exactly the same rate that k= searching is best, but those with 3-5 years experience agreed at only half the rate of the others--a little over 10%. The "moderate" viewpoint (that k= is best for subject only) was held at about the same rate--56-58%--by the shortest experience group and the longest experience group, but less than 45% of the medium experience group held this opinion. Those with 1-2 years experience and those with 3-5 years experience agreed with the characterization of k= searching as a last resort method at about the same rate, about a third. Those with 0-1 years of experience checked this only at the rate of a little over 20%, though. This also tends to reinforce earlier conclusions about faculty, who tend to look on keyword searching less favorably.

Table 29 Comparison of Keyword Searching to a=,t=,s= by Years of L
Experience

	Keyword Superior	Keyword Best for Subject	Keyword Last Res
0-1 Years	18(20.5%)	51(58%)	19(21.6%)
1-2 Years	18(20.5%)	39(44.3%)	31(35.2%)
3-5 Years	11(10.1%)	62(56.9%)	36(33%)

Percentages do not always equal 100% due to rounding.

Overall, length of LUIS experience was not really a very significant factor, considering all of the things it did not seem to make a difference in. It does seem to provide tentative reinforcement of tendencies noted earlier for faculty, who tend to be longer term users. Those who have used LUIS longer tend to have used CD-ROMs more, were more likely to have heard of keyword searching through a library announcement, and were less interested in library instruction as a keyword instruction method. Length of LUIS experience made no significant difference on responses to the test of keyword knowledge. Those with the longest experience tend more to list having been unaware of keyword searching as their reason for not having done it, were less likely to consider Boolean searching difficult, and used the keyword help screens more to learn keyword. Those with the shortest experience and those with the longest tended less to consult professors, reference books, and textbooks for keyword searching terms, and those with the longest experience tended to use LCSH more for this purpose. Finally, those with the most experience tended to have a more negative attitude toward keyword searching.

Previous Computer Experience. Question 8 asked respondents about their previous computer experience, giving nine specific options for them to check; they could check as many as appropriate. Results are given in Table 30 for the entire question, but each option was analyzed separately to see if it made any differences, since more than one option could be checked.

Table 30 Previous Computer Experience

No Other Computer Systems	37(9.3%)
Another Library's Computerized Catalog	88(22%)
CD-ROM Databases (Like ERIC, ABI/Inform)	140(35%)

Online Dial-Up Databases (Like Dialog, BRS)	32(8%)
OCLC Terminal	41(10.3%)
A Computer at Home	211(52.8%)
A Computer at Work	185(46.3%)
A Computer at School for a Non-Computer Course	178(44.5%)
A Computer at School for a Computer Course	191(47.8%)
Other	15(3.8%)

Each percentage given is from the total 400 respondents, since any num of options could be checked.

The first option is that of "no other computer systems." Only 9.3% of all respondents checked this option, indicating that computer experience of some kind was very widespread in this population, perhaps more than librarians might have expected. Those who checked this option did show significant differences on several factors in the questionnaire. Differences related to frequency of LUIS searching were mentioned above; they showed no clear pattern. The next question on which they showed a difference, significant to .05, was number 10, about subject searching expectations. Sixteen of 35, or 45.7% of those who checked this option said they liked to retrieve a few, on-target materials, even if they missed relevant materials; they went for relevance over recall. Only 95 of 354, or 26.8%, of those who had had some kind of computer experience, preferred relevance over recall.

Difference significant to .05 also arose on question 12, about future keyword searching plans. Those who had no other computer experience were less likely to plan to do keyword searching in the future. Twenty-two of 37, or 59.5%, of those with no other computer experience said they did plan to do keyword searching in the future, as opposed to 283 of 362, or 78.2%, of those who had other computer experience. Three of the first group, or 8.1%, did not know, as opposed to 7, or 1.9%, of the latter group. Twelve of 37, or 32.4%, of those who not searched other computer systems did not plan to do keyword searching in the future, versus only 72 of 362, or 19.9%, of those who had searched other computer systems.

The most statistically significant relation to this variable so far appears on an option for question 15, about which keyword instruction methods the respondent would use if they were available. The option of a video program was chosen by 8 of 37, or 21.6%, of those with no other computer experience, as opposed to only 7.8%, or 28 of 359, of those who had other computer experience. Those without computer experience were definitely more interested in this instruction option than others.

Those with no other computer experience performed worse than other respondents only on one statement under question 16, the test of keyword knowledge--16i, about truncation in keyword searching. A lower proportion of those with no other computer experience agreed with the statement (answered it correctly), and a higher proportion of that group were not sure if it was true or not. Six of 34 of those with no computer experience, or 17.6%, agreed with the statement, 2 (5.9%, disagreed, and 26 (76.5%) did not know. For those with other computer experience, 133 of 334, or 39.8%, agreed, 19, or 5.7%, disagreed, and 182, or 54.5%, disagreed.

Significant differences connected to lack of computer experience appeared next on question 19, about the difficulty of learning keyword searching. (See Table 31.) Those without other computer experience tended to find keyword searching more difficult to learn. Only 62.9% of them circled numbers on the easy half of the scale, as opposed to 84.4% of those with computer experience. Fully 11.1% of those without computer experience considered learning keyword searching very difficult, versus 1.5% of those with computer experience.

Table 31 Difficulty of Learning Keyword Searching by Lack of Compu Experience

	1(Very Easy)	2	3	4(Very Difficu
No Other Computer Exp.	8(29.6%)	9(33.3%)	7(25.9%)	3(11.1%)
Didn't Check Option	114(43.3%)	108(41.1%)	37(14.1%)	4(1.5%)

Percentages do not always equal 100% due to rounding.

Those with no other computer experience also had notable difficulty in learning Boolean searching. (See Table 32.) Quite a few respondents left this blank, many indicating they did not know what Boolean operators were, as will be discussed below, so there were only 20 respondents to this question with no other computer experience and 219 who presumably did have other computer experience. Of those 20, 45% chose numbers from the easier half of the scale, as opposed to 59.8% of the 219. Forty percent of those with no other computer experience said learning Boolean operators was very difficult, versus 9.1% of the other group.

Table 32 Difficulty of Learning Boolean Operators by Lack of Compu Experience

	1(Very Easy)	2	3	4(Very Difficu
No Other Computer Exp.	4(20%)	5(25%)	3(15%)	8(40%)
Didn't Check Option	46(21%)	85(38.8%)	68(31.1%)	20(9.1%)

Percentages do not always equal 100% due to rounding.

A difference significant to .05 appears on a response to question 21, about what methods were used to learn keyword searching. For the response, "trial and error," those with no other computer experience chose it at a rate of 10 of 27, or 37%, and others chose it at a rate of 156 of 273, or 57.1%. Those with no other computer experience may have been more hesitant to just jump in and try keyword searching. There are no other significant differences in responses to this question according to lack of computer experience, so there is no indication that that group actively preferred another method of learning.

One statement under question 22, about the keyword help screens, received significantly different rates of agreement related to computer experience (to the .05 level.) The eighth statement, "their explanations are not clear," received agreement by 25.9%, or 7 of 27, of those with no other computer experience, as opposed to only 9.9%, or 27 of 273, of the rest of the respondents. This was the only indication of differences based on this factor in views of keyword help screens.

The final variation, significant to .05, related to lack of other computer experience appears on question 25, which seeks to elicit level of satisfaction with the results of the respondents' last keyword search. A four number scale going from very satisfied to very unsatisfied was used to register response. (See Table 33.) Those with no other computer experience were noticeably less satisfied with their keyword search results than were the rest of the respondents. Forty-eight percent of them were on the satisfied half of the scale, as opposed to 73.6% of the rest of the survey population. Twenty percent of those with no other computer experience were very unsatisfied with their results, versus 5.3% of the other group.

Table 33 Satisfaction with Keyword Search Results by Lack of Compu Experience

	1(Very Satis.)	2	3	4(Very Unsati
No Other Computer Exp.	4(16%)	8(32%)	8(32%)	5(20%)
Didn't Check Option	53(20.2%)	140(53.4%)	55(21%)	14(5.3%)

Percentages do not always equal 100% due to rounding.

Those with no other computer experience preferred relevance over recall when they were doing subject searching, were less likely to plan to do keyword searching in the future, and were more interested in a video program as a possible keyword search instruction method. They seemed to be less familiar with truncation in keyword searching, they had more difficulty learning keyword searching and Boolean operators, and they were less likely to have learned keyword searching through trial and error. They thought the keyword help screens did not have enough examples. They were less satisfied with the results of their last keyword search. All these things obviously manifest differences based on lack of other computer experience, but it is a bit surprising that there were not more differences.

The next area in which respondents could indicate that they had other computer experience was the second option, "another library's computerized catalog," which 88 people checked. This option was related to only two significant differences, one only significant to .05. The most statistically significant finding was not even directly related to keyword searching; it was a connection between having searched another library's computerized catalog and having searched CD-ROMs. Forty-two of 88, or 47.7%, of those who had searched another library's computerized catalog had also searched CD-ROMs. Only 98 of 312, or 31.4%, of those who did not check the option of searching another library's computerized catalog had searched CD-ROMs. Those who had searched other library's computerized catalogs probably had been exposed at least to more CD-ROMs than those who did not check this option.

The only other difference related to this factor was only significant to .05; on question 22 about the keyword help screens, there was a difference related to use of another library's computerized catalog for the option "they [the keyword help screens] are somewhat helpful to me." Almost twice as high a percentage of those who did not check the option of use of another library's computerized catalog checked this statement about the keyword help screens--23.9%, or 55 of 230. Those who did say that they had used another library's computerized catalog only checked this statement at a rate of 12.9%, or 9 of 70. It is difficult to say what meaning this might have.

The next option under question 8 is that of having used "CD-ROM databases (like ERIC, ABI/Inform)." This response has already been significantly related to several of the variables discussed above. Graduate students and faculty members were most likely to have had CD-ROM experience--over half of each group had it. The most likely age ranges to have searched CD-ROMs were those people who were 23-30 years old and those 41 or older. Those who searched LUIS more frequently tended to have used CD-ROMs before. Those who had longer experience with LUIS also tended more to have used CD-ROMs before. As mentioned immediately above, those who had used another library's computerized catalog were more likely to have used CD-ROMs.

The next area which showed a significant relation to CD-ROM use was on question 14, about which methods of keyword instruction the respondent was aware of. The fifth option was "on-demand instruction appointments with librarians," and only 32 people checked this. Nineteen, or 59.4%, of them had used CD-

ROMs before. Those who had used CD-ROMs knew of on-demand instruction appointments at a rate of 13.6%, or 19 of 140. The rest of the respondents only knew of this instruction method at a rate of 5%, or 13 of 258. This probably relates to library instruction experiences, since those who receive library instruction about CD-ROMs are more likely to be told about on-demand instruction appointments, since this is emphasized more in those classes.

A variation significant to .05 appears on an option for question 15, about methods of keyword instruction the respondent would use if they were available. The second option is a "microcomputerized interface that makes keyword searching easier," and those who had used CD-ROM databases before were somewhat more interested in this option than the rest of the respondents. Fifty-eight of 140, or 41.4%, of those with CD-ROM experience indicated an interest in such an interface, as opposed to 77 of 256, or 30.1%, of those without CD-ROM experience. Those with CD-ROM experience would have seen an information retrieval interface operating on a microcomputer--although one could argue about how much easier some CD-ROMs make keyword searching--and might be more aware of the possibilities of this method.

The next item on which CD-ROM usage made a significant difference was on the second to last statement of keyword knowledge, question 16i, about truncation. (See Table 34.) A higher percentage of those with CD-ROM experience agreed with the statement, that is, got it correct, than did those without CD-ROM experience. A lower percentage of the CD-ROM users disagreed with the statement, or got it wrong. A little over 50% of the CD-ROM users did not know whether to agree or disagree--a high percentage, but less than the almost 60% of those without CD-ROM experience who answered "don't know." CD-ROM usage did not make a significant difference on any other of the statements of keyword knowledge, though.

Table 34 Answers to Question 16i by Experience with CD-ROMs

	Agree	Disagree	Don't Know
Exp. on CD-ROM Databases	60(47.2%)	3(2.4%)	64(50.4%)
Didn't Check Option	79(32.8%)	18(7.5%)	144(59.8%)

Percentages do not always equal 100% due to roundi

On question 20, about the difficulty of learning Boolean operators, a difference significant to .05 appears for those who have had CD-ROM experience. (See Table 35.) There is a fairly clear trend for those who have had CD-ROM experience to feel that learning Boolean operators is not as difficult. On the "easier" half of the scale, 68.2% of those with CD-ROM experience are found, versus 52.7% of those without it. Less than 8% of those with CD-ROM experience rated learning Boolean operators very difficult, but over 14% of the rest of the respondents rated it very difficult. This is the kind of effect librarians would expect and hope to see, but it is disappointing that a carryover effect is not manifesting itself more strongly.

Table 35 Difficulty of Learning Boolean Operators by CD-ROM Experience

	1(Very Easy)	2	3	4(Very Difficul
Exp. on CD-ROM Databases	25(27.5%)	37(40.7%)	22(24.2%)	7(7.7%)
Didn't Check Option	25(16.9%)	53(35.8%)	49(33.1%)	21(14.2%)

Percentages do not always equal 100% due to rounding.

The next variable which shows significant difference related to CD-ROM usage, to the .05 level, is the option of "trial and error" on question 21, about which methods the respondent used to learn keyword searching. Those with CD-ROM database experience chose this option at a rate of 64.2%, or 68 of 106, whereas those without such experience chose it at a rate of 50.5%, or 98 of 194. Perhaps those with CD-ROM experience were more comfortable with the idea of information retrieval with a computer and were more willing to just jump in and try keyword searching.

Another method of keyword instruction also showed significant variation connected with CD-ROM experience--"friend or someone at next terminal." Those with CD-ROM experience were much less likely to have checked this option. Ten of 106, or 9.4%, of them checked this option, versus 42 of 194, or 21.6%, of those without CD-ROM experience. This seems rather surprising, considering how many CD-ROM users librarians observe using this method to learn CD-ROM searching, and is rather difficult to explain.

The next item which shows slight variation, significant to .05, related to CD-ROM experience, is question 22, about the keyword help screens. When looking at respondents who checked "they are very useful to me," one finds that those with CD-ROM experience were somewhat less likely to have checked this statement. Twenty-six of 106, or 24.5%, of those with CD-ROM experience agreed with this statement, versus 71 of 194, or 36.6%, of those without CD-ROM experience. This result is not that surprising, since help screens on CD-ROM databases are usually lengthier and more complete than the keyword help screens on LUIS, and those with CD-ROM experience might have higher expectations that are less easily satisfied.

On question 24, about how terms are located to use in keyword searching, there is an option that reads "use words I found looking in a magazine index, CD-ROM database, or journal article." Significantly more of those with CD-ROM experience checked this; in fact, they accounted for 51.8%, or 29 of 56, of the people that checked this--not a surprising result since CD-ROMs are referred to in the option. Of the 106 respondents with CD-ROM experience, 29, or 27.4%, of them checked this, and only 13.9%, or 27 of 194, of the rest of the respondents checked it. It is perhaps more disturbing that, apparently, over 70% of the CD-ROM and keyword users either are not using, or cannot use, the terms developed out of one search to carry to another search.

The next option on question 8, about prior computer experience, is "online dial-up databases (like Dialog, BRS)." The number of respondents that checked this was low--only 32--since ISU has never had an online end user searching program, and only a comparatively small number of graduate library science students get any online searching experience. Some of the variables correlated with this item did show some significant differences, but they should be looked at with more than usual caution, since the numbers are so low.

Interestingly, variation significant to .05 appeared on 4 of 10 statements of keyword knowledge on question 16 for those people with online searching experience. Question 16a, which states that keyword searching makes it possible to search for a word anywhere in LUIS, received agreement by about 5% more of those with online searching experience, but was also disagreed with by 12% more of those with online experience. (See Table 36.) Over 15% less of those with online experience said they did not know. These results are mixed in their tendency.

Table 36 Answers to Question 16a by Online Searching Experience

	Agree	Disagree	Don't Know
Exp. with Online Srchg.	22(73.3%)	6(20%)	2(6.7%)
Didn't Check Option	241(68.7%)	28(8%)	82(23.4%)

Percentages do not always equal 100% due to rounding.

The statement under question 16e is about Boolean operators, and those with online experience showed a clear tendency to perform better on this item. (See Table 37.) Almost 68% of those with online searching experience agreed with the statement, as opposed to 44% of those without this experience. A lower percentage of those with online experience disagreed with the statement, and a lower percentage did not know--less than a third were not sure about the statement, as opposed to almost half of those without online experience.

Table 37 Answers to Question 16e by Online Searching Experience

	Agree	Disagree	Don't Know
Exp. with Online Srchg.	19(67.9%)	1(3.6%)	8(28.6%)
Didn't Check Option	150(44%)	24(7%)	167(49%)

Percentages do not always equal 100% due to rounding.

Those with online searching experience also manifested some differences on question 16g, about positional operators. (See Table 38.) Again, they generally performed better on this question than did the rest of the respondents. Although less than 45% of them got the question right, less than 25% of those without online experience got it right. Although a higher percentage of those with online experience disagreed with the statement (got it wrong), only a bit less than 49% did not know the answer, whereas over 70% of the rest of the respondents did not know it.

Table 38 Answers to Question 16g by Online Searching Experience

	Agree	Disagree	Don't Know
Exp. with Online Srchg.	12(44.4%)	2(7.4%)	13(48.1%)
Didn't Check Option	84(24.6%)	18(5.3%)	239(70.1%)

Percentages do not always equal 100% due to rounding.

The final statement of keyword knowledge on which online searching experience made a difference was question 16i, about truncation. Those with online experience clearly did better on this question than those without such experience. (See Table 39.) Over 61% of them got it right, as opposed to only 36% of the rest of the respondents. None of those with online experience disagreed with the statement, versus over 6% of those without that experience. Almost 60% of those without online experience did not know about the truth of the statement, as opposed to less than 40% of those with online experience.

Table 39 Answers to Question 16i by Online Searching Experience

	Agree	Disagree	Don't Know
Exp. with Online Srchg.	16(61.5%)	0	10(38.5%)
Didn't Check Option	123(36%)	21(6.1%)	198(57.9%)

Percentages do not always equal 100% due to rounding.

The next area in which online searching experience made a significant (to .05) difference in response was on question 20, about perceived difficulty of learning Boolean operators. (See Table 40.) Those with online searching experience tended to view learning Boolean operators as less difficult than did those without that experience. One finds 72.7% of those with online searching experience on the "easier" half of the scale, as opposed to 57.1% of the rest of the respondents. None of those with online searching experience rated learning Boolean operators very difficult, but almost 13% of those without online experience did.

Table 40 Difficulty of Learning Boolean Operators by Online Search Experience

	1(Very Easy)	2	3	4(Very Difficult
Exp. with Online Srchg.	9(40.9%)	7(31.8%)	6(27.3%)	0
Didn't Check Option	41(18.9%)	83(38.2%)	65(30%)	28(12.9%)

Percentages do not always equal 100% due to rounding.

On question 21, about methods used to learn keyword searching, the option of trial and error shows difference significant to .05 connected to online searching experience. Twenty of 26, or 76.9%, of those with online searching experience checked this option, as opposed to 146 of 274, or 53.3%, of the rest of the respondents. Those with online searching experience may feel more comfortable with information retrieval via computer, as those with CD-ROM experience might, and may be more willing to play around with the system.

The final factor in which online searching experience seems to make a significant difference (to .05) is under question 23, about how the respondent comes up with terms for keyword searching--the fifth option, LCSH. Those with online searching experience were more likely to have checked this option; 8 of 26, or 30.8%, of them did. Only 15.7%, or 43 of 274, of those without online searching experience said they used LCSH as a source of keyword terms.

The next type of computer experience that could be checked off under question 8 was use of an OCLC terminal. Most of these respondents were likely students taking a general undergraduate library science course, since they are required to use OCLC. Forty-one people checked this option, and analysis for difference based on this variable showed quite a few significant variations.

Users of OCLC were much more likely to have used keyword searching on LUIS, that is, they answered yes to question 11. This is not surprising, since, assuming most of them were in the beginning library science course, they have to do an exercise on keyword searching. Thirty-nine of 41, or 95.1%, of them had done a keyword search. Those who did not say they had used an OCLC terminal had done keyword searching at a rate of 77.4%, or 278 of 359. It is likely that the nature of the library science class explains most of this difference.

Those who had used OCLC showed significant variation on two of the statements of keyword knowledge, under question 16. On question 16e, about Boolean operators, OCLC users performed better, significant to .05, than those without OCLC experience. (See Table 41.) Over 82% of OCLC users agreed with the statement, i.e., got it right, versus under 68% of those without OCLC experience. Although a slightly higher percentage of the OCLC people disagreed with the statement, far fewer of them checked "don't know." These students almost certainly received library and other class instruction that touched on keyword searching, which might be a factor in this.

Table 41 Answers to Question 16e by OCLC Experience

	Agree	Disagree	Don't Know
Experience with OCLC	32(82.1%)	4(10.3%)	3(7.7%)
Didn't Check Option	231(67.5%)	30(8.8%)	81(23.7%)

Percentages do not always equal 100% due to rounding.

Question 16h, a statement about field limiting in keyword, also showed variation to the .05 level connected with OCLC experience. (See Table 42.) Those with OCLC experience definitely did better on this item. Almost 50% of them got it right, versus almost 30% of the rest of the respondents. Less than 8% disagreed with the statement, as opposed to over 11% of those without OCLC experience. Over 43% of those with OCLC experience did not know the answer, but almost 60% of those without OCLC experience did not know it.

Table 42 Answers to Question 16h by OCLC Experience

	Agree	Disagree	Don't Know
Experience with OCLC	19(48.7%)	3(7.7%)	17(43.6%)
Didn't Check Option	97(29.3%)	37(11.2%)	197(59.5%)

Percentages do not always equal 100% due to rounding.

Those with OCLC experience showed significant variation (to .05) on the question of why they had not performed a keyword search before, but the numbers are so small, they may only be looked at as indicative. Three of 7, or 42.9%, of those with OCLC experience indicated that they did not need to use keyword searching, that other forms of searching are adequate (option 3), as opposed to 31 of 112, or 27.7%. One OCLC user, or 14.3%, said s/he did not search often enough, and would not remember how to do keyword searching (option 4), versus 11 of 112, or 9.8%, of the other respondents. Two OCLC users, or 28.6%, said they had not done keyword searching because there was no staff to assist them (option 6), versus 2 of 112, or 1.8%, non-OCLC users. Finally, one OCLC user, or 14.3%, said s/he was not aware of keyword searching (option 7), as opposed to 43 of 112, or 38.4%, of the rest of the respondents. None of the OCLC users checked the first, second, fifth, or eighth options, but most of these were checked at a very low rate by non-OCLC users, also. The exception is option 5, that the respondent has not been able to attend a library instruction class on keyword, which was checked by 12 of 112, or 10.7%, of those without OCLC experience. That none of the OCLC users checked this is again undoubtedly owing to their probable attendance of library instruction sessions as part of their library science class. This would also account for the fact that only one respondent with OCLC experience cited lack of awareness of keyword searching as his/her reason for not doing it.

Difference significant to .05 connected with OCLC experience was found next on the perceived difficulty of learning keyword searching. (See Table 43.) Of those with OCLC searching experience, 60%, or 21 of 35, of them professed to find keyword searching very easy to learn, versus less than 40% of those without OCLC experience. Eighty percent of OCLC users were on the "easier" half of the scale, versus 72.7% of non-OCLC users. None of the OCLC users circled "very difficult"; 2.7% of the non-OCLC users did. The difference is not drastic, but is indicative.

Table 43 Difficulty of Learning Keyword Searching by OCLC Experience

	1(Very Easy)	2	3	4(Very Difficult
Experience with OCLC	21(60%)	7(20%)	7(20%)	0
Didn't Check Option	101(39.6%)	110(43.1%)	37(14.5%)	7(2.7%)

Percentages do not always equal 100% due to rounding.

Even more significant differences appear when looking at OCLC experience in relation to perceived difficulty of learning Boolean operators. (See Table 44.) Over 72% of those with OCLC experience were on the "easier" side of the scale, versus over 56% of those without OCLC experience. Over 48% of the OCLC users indicated they found Boolean operators very easy to learn, versus over 17% of the non-OCLC users. None of the OCLC users said Boolean operators were very difficult to learn, as opposed to over 13% of the rest of the respondents.

Table 44 Difficulty of Learning Boolean Operators by OCLC Experience

	1(Very Easy)	2	3	4(Very Difficul
Experience with OCLC	14(48.3%)	7(24.1%)	8(27.6%)	0
Didn't Check Option	36(17.1%)	83(39.5%)	63(30%)	28(13.3%)

Percentages do not always equal 100% due to rounding.

A connection significant to .05 appeared between an option on question 23, about how terms are found for keyword searching, and OCLC use. The second option is "consult professor, reference books, or textbook." A lower percentage of those with OCLC experience checked this option--2 of 36, or 5.6%, versus 52 of 264, or 19.7%, of those without OCLC experience. This is a bit surprising, since one might have expected students who were being taught about reference materials in a library science class might have used them more for this purpose, not less.

Another option on this question, using LCSH as a source for keyword terms, showed the final significant difference connected with OCLC experience. More in line with what one might expect, those with OCLC experience were more likely to chose this option--12 of 36, or 33.3%, of them did. The rest of the respondents chose the option at the rate of 14.8%, or 39 of 264. Again, this probably stems from the OCLC users likely exposure to library instruction and class instruction in library science.

The next option under question 8, about prior computer experience, was use of "a computer at home," which 211 people checked. This factor showed limited significant variation on only two other factors checked. Question 20, about perceived difficulty of learning Boolean operators, showed variation significant to the .05 level when home computer experience was checked. (See Table 45.) Those with home computer experience had slightly less difficulty with Boolean operators than those without home computer experience. Those with experience had 63.1% of their ratings on the "easier" half of the scale, versus 53.2% of the rest. Over 6% of those with home computer experience chose the option "very difficult," as opposed to over 18% of the rest of the respondents.

Table 45 Difficulty of Learning Boolean Operators by Home Computer Expe ence

	1(Very Easy)	2	3	4(Very Difficul
Exp. with Home Computer	33(25.4%)	49(37.7%)	40(30.8%)	8(6.2%)
Didn't Check Option	17(15.6%)	41(37.6%)	31(28.4%)	20(18.3%)

Percentages do not always equal 100% due to rounding.

The only other significant (to .05) variation related to home computer experience appears on an option under question 21, about keyword learning methods. The option of keyword help screens was chosen by almost half of the home computer users--48.2%, or 79 of 164--versus 35.3%, or 48 of 136, of those without home computer experience. Those with home computers may well be more in the habit of using onscreen documentation for computer systems they use.

The next option under question 8 was "a computer at work," checked by 185 people. There were a few more questions that showed significant variation on this factor than on home computer use, but still not many. The first was on one of the statements of keyword knowledge under question 16--the third one, saying "just typing in k and pressing enter gets you to the keyword help screens where you can read about keyword searching and/or enter a long keyword search." The variation was only significant to .05, but those with work computer experience did somewhat worse than others did on this question. (See Table 46.) Fewer of them agreed with the statement, more of them disagreed, and more did not know.

Table 46 Answers to Question 16c by Work Computer Experience

	Agree	Disagree	Don't Know
Exp. with Work Computer	79(45.4%)	18(10.3%)	77(44.3%)
Didn't Check Option	118(57%)	11(5.3%)	78(37.7%)

Percentages do not always equal 100% due to rounding.

The next question which showed significant (to .05) variation on work computer use was question 18, about keyword searching frequency. (See Table 47.) The numbers show a tendency for work computer users to use keyword searching less frequently than the rest of the respondents. Only 51.5% of the work computer users use keyword more than half the time they use LUIS, or more frequently, versus 65.9% of those without work computer experience. Almost a third of the work computer users said they used keyword searching less than half the time they use LUIS, versus only a fifth of the other respondents.

Table 47 Frequency of Keyword Searching by Work Computer Experience

	Work Computer Exp.	Didn't Check Opti
Almost every time I use LUIS	52(39.4%)	69(42.1%)
More than half the times I use LUIS	16(12.1%)	39(23.8%)
Less than half the times I use LUIS	42(31.8%)	33(20.1%)
Almost never	22(16.7%)	23(14%)

Percentages do not always equal 100% due to rounding.

Those with computer experience from work showed significant variation on the perceived difficulty of learning Boolean operators. (See Table 48.) They definitely tended to perceive it as easier than those without work computer experience. Over 70% of those with work computer experience were on the "easier" half of the scale, as opposed to over 45% of those without that experience. Over 6% of those with work computer experience chose the option "very difficult," versus over 16% of the rest of the respondents. This finding is more in line with what one might expect of experienced computer users.

Table 48 Difficulty of Learning Boolean Operators by Work Computer Expe ence

	1(Very Easy)	2	3	4(Very Difficul
Exp. with Work Computer	80(27.5%)	47(43.1%)	25(22.9%)	7(6.4%)
Didn't Check Option	20(15.4%)	43(33.1%)	46(35.4%)	21(16.2%)

Percentages do not always equal 100% due to rounding.

The final item on which work computer experience made a significant (to .05) difference is, as for home computer users, the second option under question 21, about methods used to learn keyword searching--keyword help screens. Almost half--49.6%, or 67 of 135--of those with work computer experience checked this option, versus 36.4%, or 60 of 165, of the rest of the respondents. As mentioned above, those with this type of computer experience might be more inclined to use online documentation.

The next option under question 8 is "a computer at school for a non-computer course," which 178 people checked. There were only a few significant variations related to this factor, also. The first was on a major question, however--a variation significant to .05 on question 11, about whether the respondent has ever done a keyword search on LUIS. The school computer users were somewhat more likely to have done a keyword search than the rest of the respondents--151 of 178, or 84.8%, as opposed to 166 of 222, or 74.8%, of those who did not check that experience option.

The users of a school computer for a non-computer course showed variation significant to .05 on two of the statements of keyword knowledge on question 16. Question 16a, about keyword allowing the user to search for a single word anywhere in LUIS, showed somewhat better performance by those with school computer experience. (See Table 49.) Almost 3/4 of the school computer experienced users got the question right, versus under 66% of the rest of the respondents. More of the experienced users got the question wrong, however, although fewer of them checked "don't know."

Table 49 Answers to Question 16a by School Computer Experience in a N Computer Course

	Agree	Disagree	Don't Know
Sch. Comp. Exp.-Non-Comp. Crse.	125(73.1%)	18(10.5%)	28(16.4%)
Didn't Check Option	138(65.7%)	16(7.6%)	56(26.7%)

Percentages do not always equal 100% due to rounding.

The other statement which showed variation significant to .05 related to school computer experience in a non-computer course was 16i, about truncation in keyword searching. (See Table 50.) Those with that particular computer experience generally did better than the rest of the respondents on this question. Over 45% of them agreed with the statement, versus over 31% of the others, although the level of disagreement was about the same. Less than half of the school computer experienced group did not know about the truth of the statement, as opposed to over 62% of those without that experience.

Table 50 Answers to Question 16i by School Computer Experience in a N Computer Course

	Agree	Disagree	Don't Know
Sch. Comp. Exp.-Non-Comp. Crse.	75(45.5%)	9(5.5%)	81(49.1%)
Didn't Check Option	64(31.5%)	12(5.9%)	127(62.6%)

Percentages do not always equal 100% due to rounding.

The only other item tested on which this type of computer experience made a significant difference was on question 21, about methods used to learn keyword searching--the sixth option, "assistance from passing library staff member." Only 22 people checked this option at all, however. Over three quarters, 77.3%, or 17, of them were users of a school computer for a non-computer course, though. Seventeen of 144, or 11.8%, of those with this computer experience checked this assistance option, versus 5 of 156, or 3.2%, of the rest of the respondents. It is difficult to speculate why this result arises, especially since school computer users for a computer course do not show this variation. (See below.)

The final option under question 8 is use of "a computer at school for a computer course," which 191 people checked. This group does show some variation that distinguishes them from those who used a school computer for a non-computer course; they vary on seven items, as opposed to four. They show variation on question 11, on whether the respondent has done keyword searching or not. It is technically significant to .01, instead of just .05 as the non-computer course respondents showed, but the percentages are actually very close. Of those with school computer experience in a computer course, 164 of 191, or 85.9%, had done a keyword search, versus 153 of 209, or 73.2%, of those without that experience. (The corresponding figures for the non-computer course respondents were 84.8% and 74.8%.)

Unlike the respondents using a computer for a non-computer course, those using it for a computer course showed variation on question 12, about future keyword searching plans. (See Table 51.) Over 82% of those with this computer experience planned to do keyword searching in the future, versus over 70% of the rest of the respondents. Only 1 person with this kind of computer experience said s/he did not plan to do another keyword search. One fourth of those without this type of computer experience said they did not know if they would do another keyword search, versus less than 17% of those with school computer experience in a computer course.

Table 51 Future Keyword Searching Plans by School Computer Experience i Computer Course

	Yes	No	Don't Know
Sch. Comp. Exp.-Comp. Course	158(82.7%)	1(.5%)	32(16.8%)

Didn't Check Option	147(70.7%)	9(4.3%)	52(25%)

Percentages do not always equal 100% due to rounding.

Those with school computer experience in a computer course show significant variation on three statements of keyword knowledge on question 16. Two of the statements have variation significant to .05, and one varies significantly to .01. The most significant variation is found on 16a, about keyword searching allowing access to a single word anywhere in LUIS, an item on which those with non-computer course experience varied to the .05 level. (See Table 52.) Those with computer course experience got this question right at a rate of over 76%, as opposed to over 62% for the rest of the respondents. The two groups disagreed with the statement at about the same rate, but only around 15% of those with computer course experience disagreed with the statement, versus over 28% of the rest of the respondents. These numbers do show a more definite trend toward correct knowledge of this statement than did those of the group with non-computer course computer experience.

Table 52 Answers to Question 16a by School Computer Experience in a Comp er Course

	Agree	Disagree	Don't Know
Sch. Comp. Exp.-Comp. Course	141(76.2%)	16(8.6%)	28(15.1%)
Didn't Check Option	122(62.2%)	18(9.2%)	56(28.6%)

Percentages do not always equal 100% due to rounding.

Those experienced with a school computer in a computer course also showed variation on the fourth statement under question 16, about the entering a phrase in keyword searching without an operator; it was significant to .05. (See Table 53.) Those with this computer course experience agreed with the statement at a higher rate, disagreed with it at a higher rate, but were also less uncertain about--less likely to say they did not know.

Although the results are muddy, they generally show this computer experienced group doing better on this statement. Those with school computer, non-computer course experience did not show significant variation on this question.

Table 53 Answers to Question 16d by School Computer Experience in a Comp er Course

	Agree	Disagree	Don't Know
Sch. Comp. Exp.-Comp. Course	86(47.5%)	24(13.3%)	71(39.2%)
Didn't Check Option	72(36.7%)	20(10.2%)	104(53.1%)

Percentages do not always equal 100% due to rounding.

The final statement on question 16, which is not about keyword searching directly, also showed variation to .05 for the group of school computer users in a computer course. (See Table 54.) This statement is "to do a search on LUIS using the subject (s=) mode that will work properly, you must have a valid Library of Congress Subject Heading." It is difficult to speculate on why, but those with school computer experience in a computer course performed somewhat better on this question than did the rest of the respondents. Those with non-computer course computer experience showed no variation on this item, but those with computer course experience were a bit more likely to agree with the statement and less likely to say they did not know. They were more likely to disagree with the statement, however.

Table 54 Answers to Question 16j by School Computer Experience in a Comp er Course

	Agree	Disagree	Don't Know
Sch. Comp. Exp.-Comp. Course	104(58.8%)	84(19.2%)	39(22%)
Didn't Check Option	96(51.6%)	24(12.9%)	66(35.5%)

Percentages do not always equal 100% due to rounding.

This computer experience group also shows variation significant to .05 on question 19, about difficulty of learning keyword searching. (See Table 55.) Those with non-computer course, computer experience showed no significant variation on this item. The results for computer course respondents are a bit mixed; 86.4% of them are on the "easier" half of the scale, as opposed to 78% of the rest of the respondents, but a lower percentage of them rated keyword searching "very easy" to learn. None of them rated it "very difficult" to learn, as opposed to over 5% of the rest of the respondents.

Table 55 Difficulty of Learning Keyword Searching by School Computer Ex rience in a Computer Course

	1(Very Easy)	2	3	4(Don't Know)
Sch. Comp. Exp.-Comp. Course	63(40.9%)	70(45.5%)	21(13.6%)	0
Didn't Check Option	59(43.4%)	47(34.6%)	23(16.9%)	7(5.1%)

Percentages do not always equal 100% due to rounding.

The final variable on which this kind of computer experience seems to relate to a difference is on question 26, asking the respondent to compare k= searching to a=, t=, and s= searching. There is variation significant to .05. (See Table 56.) Those with school computer experience in a computer course show a somewhat more positive attitude toward keyword searching than do the rest of the respondents. A higher percentage of them consider k= searching superior to other forms, and a higher percentage also says they use it most of the time for subject searching. A lower percentage consider it only as a last resort. Those with school computer experience in a non-computer course show no significant variation on this.

Table 56 Comparison of Keyword Searching to a=,t=,s= by School Compu Experience in a Computer Course

	K= Superior	K= Best for Subject	K= Last Res
Sch. Comp. Exp.-Comp. Crse	29(19.2%)	88(58.3%)	34(22.5%)
Didn't Check Option	18(13.3%)	65(48.1%)	52(38.5%)

Percentages do not always equal 100% due to rounding.

Computer experience does, then, relate to some significant differences in attitudes towards, knowledge of, and perceptions of keyword/Boolean searching. Some types of computer experience make more difference than others, and complete lack of computer experience showed the most differences of all, although there were comparatively few people checking this option. They tended to find more difficulty in learning aspects of keyword searching and they were less satisfied with their results.

Most of the different types of computer experience showed some variation in positive directions, that is, the respondents with the kind of experience did better on keyword knowledge, perceived keyword searching as easier, etc. The options of another library's computerized catalog and having a computer at home made the least difference in questionnaire response. A computer at work and a school computer for a non-computer course also made comparatively little difference. The options that made the most differences were use of CD-ROM databases, online dial-up databases, OCLC terminals, and a school computer for a computer course. People that chose any of the first three options may have received more library instruction than other respondents, and these options all involve searching for information in a fairly sophisticated fashion, or imply more advanced computer knowledge, so it is not surprising that these related to some differences. It is perhaps surprising that they did not make more differences.

LUIS Search Type. Question 9 asked the respondent what type of search s/he did the last time LUIS was searched. Only one item could be checked. The responses and raw numbers were as follows.

Table 57 Entry Type of Last LUIS Search

An Author's Full or Last Name	67(16.8%)
An Author's First Name	3(.8%)
A Complete Title or the First Part of It	86(21.5%)
A Part of the Title Other than the First Part	5(1.3%)
A Library of Congress Subject Heading	69(17.3%)
Topic Words	150(37.5%)
Unusable Response	13(3.3%)
Blank	7(1.8%)

Percentages do not always equal 100% due to rounding.

The most used single type of search entry was topic words, and it seems rather high, considering the overall amount of keyword searching done--that is, about 20% of all searches. This would indicate that some people are using topic words for searches, whether they use k= searching or not, and they may well not understand the implications of this. The correlation discussed in the next paragraph supports the idea that some people do not know that topic words, if they are not Library Congress Subject Headings, should only be searched with k=. (Question 16j addresses this matter below.) Comparatively few people searched a part of the title other than the first, or an author's first name, information that could only correctly be found through keyword searching. The correlation with question 11, discussed in the next paragraph, at least shows that those who did these types of searches had done some keyword searching.

Only nine variables were considered interesting and analyzed for possible correlation with LUIS search entry type. Of the factors analyzed, two showed significant variation. Question 11, at the heart of the study, about whether the respondent has done keyword searching or not, showed significant variation on this factor. (See Table 58.) Variation was significant to .05. Percentages searching for an author's full or last name were about the same between keyword and non-keyword users, but there was more of a difference between the two groups in the area of searching by title or the first part of it; non-keyword users did this more. Non-keyword searchers also did substantially more searching with LCSH than did keyword searchers, and they did less topic word searching, but they still did some; over one fourth of them checked this option. As alluded to above, none of the non-keyword searchers did searches by an author's first name or a part of the title other than the first.

Table 58 Performance of Keyword Searching by Entry Type of Last LUIS Sea

	Keyword Srch Done	Keyword Srch Never
Author's Full or Last Name	56(18.4%)	11(14.7%)
Author's First Name	3(1%)	0
Complete Title or First Part of It	63(20.7%)	23(30.7%)
Part of the Title Other than First	5(16.4%)	0
Library of Congress Subject Heading	48(15.7%)	21(28%)
Topic Words	130(42.6%)	20(26.7%)

Percentages do not always equal 100% due to rounding.

The other factor which showed significant variation related to entry type of the last LUIS search done was question 26, about attitudes towards k= searching, as opposed to a=, t=, and s= searching. (See Table 59.) Those who use keyword searching only as a last resort had author searching as the most prevalent method, and they did it more than the other two groups. The group that did title searching to the greatest extent were those who said k= searching was best for subjects, but they still use a= and t= searching as appropriate. The kind of searching done most by this group, though, was for topic words. Those who considered k= searching superior to other methods were the least likely to have searched for a Library of Congress Subject Heading. The group most likely to use a Library of Congress Subject Heading was those who considered k= searching a last resort. The group most likely to use topic words was the "keyword superior" group; this was the kind of searching they did most. Most of this makes logical sense.

Table 59 Attitude toward Keyword Searching by Entry Type of Last L
Search

	K=Superior	K=Best for Sub.	K=Last Res
Author's Full or Last Name	5(11.1%)	22(15%)	26(32.1
Author's First Name	0	1(1%)	2(2.5%
Complete Title or First Part of It	5(11.1%)	35(23.8%)	15(18.5
Part of Title Other than First	1(2.2%)	2(1.4%)	2(2.5%
Library of Congress Subject Heading	4(8.9%)	21(14.3%)	19(23.5
Topic Words	30(66.7%)	66(44.9%)	17(21%)

Percentages do not always equal 100% due to rounding.

Type of last LUIS search entry does, then, logically relate to two other factors. Whether or not someone has done a keyword search before relates in a reasonable way to the types of LUIS search it is possible to do with k= searching. The attitudes toward k= searching also relates logically to the type of search entry done. In this case, the type of LUIS search done should not be considered a "cause" of the varying factor, but a result.

Subject Search Expectations. Question 10, about what a respondent expects from a subject search, is based on a growing suspicion the author had, that is reflected in the literature, and that is, that most patrons do not mind, may even prefer, looking through a very long list of items and picking out those of interest. They seem to prefer doing this to figuring out how to narrow a search, particularly if the system makes this at all complicated. The results on this question seem to bear this out, although it is realized that the patrons would probably prefer the perfect search--one that is exactly on target with minimal effort on their part. This is not directly a question on keyword searching, but it does have a bearing on how librarians instruct patrons. Results on this question were as follows.

Table 60 Subject Search Expectations

I like to retrieve just a few, on-target materials, even if I might be missing some relevant items.	111(27.8%)
I like to get a long list of related materials, so I can go through them on my own, even if I have to look through a lot of things I don't use.	278(69.5%)
Unusable Response	2(.5%)
Blank	9(2.3%)

Percentages do not always equal 100% due to rounding.

This item had relatively few other variables that might provide meaningful correlation, and none of those tried related to it significantly. It did not vary significantly with whether keyword searching had been done or was planned, with difficulty of learning keyword searching or why it was not done, or with satisfaction with keyword searching or attitudes toward keyword searching.

This finding still has importance, however, since librarians need to be aware of this common predilection and be prepared to work with it. The author is not in favor of trying to change such a strong preference, but rather of trying to instruct with it in mind, whether individually or in a class. Most patrons would probably prefer to be taught enough to retrieve a list of retrieved items and they do seem to resist intricate knowledge about how results might be narrowed down, at least when they are first learning a system. Patrons should certainly be made aware that there are advanced search capabilities which will narrow a search, and about one third of them do prefer relevance over recall, so, of course, advanced instruction needs to be available. Some patrons also tend to do searches that are too narrow, and they need to know how to deal with this. Librarians should not, however, waste their time and annoy patrons by trying to force on them all the advanced techniques of the system at the beginning.

Keyword Searching-Related Questions for All Respondents

Questions 11 through 16 relate to keyword searching and were asked of all respondents, whether they had done keyword searching before or not.

Keyword Search Performance. Question 11, about whether the respondent has ever done a keyword search, is obviously the heart of the survey. Almost 4/5 of all respondents had done a keyword search, and, as will be shown below, over 20% of those who had not done a keyword search, planned to do one. This seems to show a good spread of at least the existence and basic idea of keyword searching. (See Table 61 for raw numbers.)

Table 61 Performance of Keyword Searching

	Yes	No
Have you ever done a keyword (k=) search on LUIS?	317(79.3%)	83(20.7%

This question was analyzed with all of the demographic factors on the first part of the questionnaire, to be answered by everyone, whether or not they had done keyword searching. This question has earlier been shown to vary significantly with status, age range, frequency of LUIS searching, use of an OCLC terminal, school computer use for computer and non-computer courses, and type of last LUIS search entry. Those of faculty status, older respondents, and less frequent LUIS searchers tend to have done keyword searching less. Those who had used an OCLC terminal or a school computer for computer or non-computer courses tend to have done it more, as had those who said their last LUIS search entry was topic words.

Whether or not keyword searching had been done was analyzed next with question 12, about whether the respondent planned to do keyword searching in the future. (See Table 62.) As might be expected, over 90% of those who had done keyword searching before, planned to do it again in the future. Only 1% of them did not plan to do k= searching again. More interestingly, over 20% of those who had not done a keyword search before planned to do one in the future. Only 8.5% said they would not ever be doing one. Over 70% were not sure. This means that 83.5% of the respondents had either done a keyword search or were planning to do one. Only 7 of 400, or 1.8%, of the respodents had never done a keyword search and never planned to.

Table 62 Future Plans for Keyword Searching by Performance of Keyw Searching

	Yes	No	Don't Know
Had Done K= Searching	288(90.9%)	3(1%)	26(8.2%)
Hadn't Done K= Searching	17(20.7%)	7(8.5%)	58(70.7%)

Percentages do not always equal 100% due to rounding.

The question of whether keyword searching had been done was also analyzed for correlation with question 16, the ten statements of keyword-related knowledge. Each statement response varied significantly with whether the person had done keyword searching before or not. This is certainly not surprising, but it is interesting to see confirmation that those with keyword experience did better on this question. It is also interesting to see how many of those who had done keyword searching got questions wrong, and how many who had never done keyword searching got them right!

The first statement is about keyword searching making it possible to search for a single word anywhere in LUIS, and those who had done keyword searching did much better on this question. (See Table 63.) Eighty percent of them got it right. Twenty-five percent of those who had not done keyword searching also got it right, however. A higher percentage of those who had done keyword searching got the question wrong than of those who had not done it. Understandably, over 70% of those who had not done keyword searching just did not know the answer. It is a bit frightening to note, however, that on this most basic statement about keyword searching, 20% of those who had done keyword searching either did not know the answer or got it wrong.

Table 63 Answers to Question 16a by Performance of Keyword Searching

	Agree	Disagree	Don't Know
Have Done K= Searching	244(80%)	31(10.2%)	30(9.8%)
Haven't Done K= Searching	19(25%)	3(3.9%)	54(71.1%)

Percentages do not always equal 100% due to rounding.

The second question is about keyword searching making it possible to search for a phrase anywhere in LUIS, and those who had used keyword searching also performed better on this question, but not quite as well as on the first question. (See Table 64.) This time less than 2/3 of the k= searchers agreed with the statement, versus about 1/5 of the non-k= searchers, so the gap was not as large. Again, a more substantial portion of the keyword searchers got the question wrong than did the non-keyword searchers. Almost 1/4 of the keyword searchers did not know the answer to the question, versus almost 3/4 of the non-keyword searchers.

Table 64 Answers to Question 16b by Performance of Keyword Searching

	Agree	Disagree	Don't Know
Have Done K= Searching	194(64.2%)	38(12.6%)	70(23.2%)
Haven't Done K= Searching	16(21.1%)	4(5.3%)	56(73.7%)

Percentages do not always equal 100% due to rounding.

The third statement says that typing in k and pressing enter brings up keyword help screens and a screen where a long keyword search can be entered. Keyword searchers still performed much better on this question than non-keyword searchers, but the percentage that got it right dropped from the above questions and the percentage that did not know rose. (See Table 65.) Less than 60% of the k= searchers agreed with the statement, versus over 1/4 of the non-k= searchers. Twice as high a percentage of keyword searchers disagreed with the statement as opposed to non-keyword searchers. Over 1/3 of the keyword searchers did not know the answer, versus under 70% of the non-keyword searchers.

Table 65 Answers to Question 16c by Performance of Keyword Searching

	Agree	Disagree	Don't Know
Have Done K= Searching	176(57.7%)	26(8.5%)	103(33.8%)
Haven't Done K= Searching	21(27.6%)	3(3.9%)	52(68.4%)

Percentages do not always equal 100% due to rounding.

The fourth statement is about the default operator, although it does not say it in those terms; it says that if a phrase of two or more words is entered, the words could be anywhere in a record, not necessarily right together. Again, keyword searchers performed better on this than the rest of the respondents, but the percentage that got it right dropped noticeably, and the percentages that disagreed and did not know rose. (See Table 66.) Less than 50% of the keyword searchers agreed with the statement, versus over 13% of the non-keyword searchers, and over 13% of the keyword searchers disagreed with the statement, versus over 5% of the non-keyword searchers. Over 80% of the non-keyword did not know the answer, and almost 40% of the keyword searchers did not know.

Table 66 Answers to Question 16d by Performance of Keyword Searching

	Agree	Disagree	Don't Know
Have Done K= Searching	148(49%)	40(13.2%)	114(37.7%)
Haven't Done K= Searching	10(13.3%)	4(5.3%)	61(81.3%)

Percentages do not always equal 100% due to rounding.

The fifth statement is about Boolean operators, saying keyword searching allows combining topics together, using synonyms for a topic, and getting rid of certain aspects of a topic by using "and," "or," and "not" between words. Performance generally improves for both groups of respondents, compared to the last question, but still only a little over 50% of the keyword searchers agreed with the statement, versus over 17% of the non-keyword searchers. (See Table 67.) Over 7% of the k= searchers disagreed, versus 4% of the non-k= searchers. A higher percentage than has been seen so far of keyword searchers did not know the answer on this statement. The all-important knowledge of Boolean operators has obviously not penetrated very far in the group of LUIS users.

Table 67 Answers to Question 16e by Performance of Keyword Searchng

	Agree	Disagree	Don't Know
Have Done K= Searching	156(53.1%)	22(7.5%)	116(39.5%)
Haven't Done K= Searching	13(17.3%)	3(4%)	59(78.7%)

Percentages do not always equal 100% due to rounding.

The sixth statement under question 16 is about stopwords, saying that keyword searching will not allow searching of certain common words like "of," "the," or "in." Those who had done keyword searching also performed better on this statement, and the results were similar to those for the last statement, about Boolean operators. (See Table 68.) Fifty-four percent of the keyword searchers agreed with the statement, versus over 23% of the non-keyword searchers--a higher percentage for the latter group than they had on Boolean operators. The disagreement rate was not quite as high for either group as on Boolean operators, but those who had done keyword searches, again, disagreed with the statement at a higher rate. Over 40% of this group did not know the answer, versus over 3/4 of the non-keyword searchers.

Table 68 Answers to Question 16f by Performance of Keyword Searching

	Agree	Disagree	Don't Know
Have Done K= Searching	161(54%)	16(5.4%)	121(40.6%)
Haven't Done K= Searching	17(23.3%)	1(1.4%)	55(75.3%)

Percentages do not always equal 100% due to rounding.

The seventh statement under question 16 is about positional operators, saying that using "adj" or "same" with keywords allows one to specify that they be right together or in the same section of the record. Although those who had done keyword searching still tended to perform better on this question, new abysses of ignorance were plumbed in this response. (See Table 69.) Less than a third of those who had done keyword searching agreed with the statement, as did less than a tenth of those who had not done keyword searching. Disagreement rates were not high, but almost 65% of keyword searchers said they did not know whether the statement was true, as did over 86% of non-keyword searchers.

Table 69 Answers to Question 16g by Performance of Keyword Searching

	Agree	Disagree	Don't Know
Have Done K= Searching	89(30.1%)	17(5.7%)	190(64.2%)
Haven't Done K= Searching	7(9.7%)	3(4.2%)	62(86.1%)

Percentages do not always equal 100% due to rounding.

The eighth statement is about field limiting, saying that keyword searching allows limiting a search to certain sections of records by typing in .au. for author, .ti. for title, and .su. for subject after keywords. Overall performance is generally a bit better than on the last statement, but still is pretty poor. (See Table 70.) Over 35% of the keyword searchers agreed with the statement, versus almost 14% of the non-keyword searchers. The keyword searchers are back to disagreeing at a fairly high level, though--almost three times as much as the non-keyword searchers. Almost 82% of the non-keyword searchers did not know the answer, versus 52% of the keyword searchers.

Table 70 Answers to Question 16h by Performance of Keyword Searching

	Agree	Disagree	Don't Know
Have Done K= Searching	106(35.6%)	37(12.4%)	155(52%)
Haven't Done K= Searching	10(13.9%)	3(4.2%)	59(81.9%)

Percentages do not always equal 100% due to rounding.

The ninth statement under question 16 is about truncation, saying that using a $ at the end of keywords allows searchers to find more than one word ending, such as computer$ for computer, computers, computerized, etc. Keyword searcher performance on this statement improved a bit over the last two statements, but non-keyword searcher performance was much worse. (See Table 71.) Nearly 90% of them said they did not know whether this statement was true. Only about 8% got it right. Almost 45% of the keyword searchers agreed with this statement, but almost 49% of them did not know the answer. A higher percentage of the keyword searchers still disagreed with the statement than of the non-keyword searchers.

Table 71 Answers to Question 16i by Performance of Keyword Searching

	Agree	Disagree	Don't Know
Have Done K= Searching	133(44.9%)	19(6.4%)	144(48.6%)
Haven't Done K= Searching	6(8.3%)	2(2.8%)	64(88.9%)

Percentages do not always equal 100% due to rounding.

The final statement on question 16 is not directly about keyword searching, but has implications for it; it states that to do a correct s= search, one must have a valid Library of Congress Subject Heading. There was not necessarily anything about this question that would mean that keyword searchers should get it right more often, since it did not directly relate to keyword searching, but they still were more likely to agree with the statement and less likely to say they did not know the answer. (See Table 72.) They were also more likely to disagree with statement, however. Almost 60% of the keyword searchers agreed with the statement, versus less than 38% of the non-keyword searchers. Only a little over 23% of the keyword searchers said they did not know the answer, versus over 50% of the non-keyword searchers. Only over 11% of the non-keyword searchers disagreed with the statement, versus over 17% of the keyword searchers.

Table 72 Answers to Question 16j by Performance of Keyword Searching

	Agree	Disagree	Don't Know
Have Done K= Searching	173(59.5%)	50(17.2%)	68(23.4%)
Haven't Done K= Searching	27(37.5%)	8(11.1%)	37(51.4%)

Percentages do not always equal 100% due to rounding.

Those who had done keyword searching definitely were more likely to have correct knowledge about keyword searching and about one aspect of s= searching. They were also more likely to have incorrect knowledge about it. Once keyword searchers have gotten a definite, wrong idea, they cling to it harder than those who have not done keyword searching; they are less likely to think they might not have the right information. This points out an even stronger need to convey correct information as definitely as possible at the beginning.

Keyword searchers had the highest percentage of correct answers on the first statement under question 16, about single word searching. They were most likely to disagree with the last statement, about correct s= searching. They were most likely to say they did not know the answer to 16g, about positional operators. Non-keyword searchers were most likely to agree with the final statement, and they were most likely to disagree with that statement, too. They were most likely to say they did not know the answer on statement 16i, about truncation.

Keyword Searching Plans. In question 12, respondents were asked if they planned to do a keyword search in the future. The answers were as follows.

Table 73 Future Plans for Keyword Searching

Do Plan to do Keyword Search	305(76.3%)
Do Not Plan to do Keyword Search	10(2.5%)
Do Not Know	84(21%)
Blank	1(.3%)

Percentages do not always equal 100% due to rounding.

Future keyword searching plans were analyzed with several other factors occurring later in the questionnaire, such as perceived difficulty of learning keyword searching and Boolean operators, perceptions about the keyword help screens, and measures of satisfaction with keyword search results. It has already been found to vary significantly with four factors studied earlier. Those who searched LUIS frequently, those who had used a school computer for a computer course, and those who had already done a keyword search were more likely to plan to do one in the future. Those who had never used a computer system before were less likely to plan to do a keyword search in the future. Further significant variation was found on six items.

Future plans to do keyword searching varied significantly with perceived difficulty of learning keyword searching. (See Table 74.) Only 4 people that said they would not do keyword searching again answered this question, but the answers of those who did not know if they would do keyword searching again are also indicative. Over 85% of those who do plan to do keyword searching again rated it on the "easier" half of the scale for learning, versus 25% of those who did not plan to do it again, and 60% of those who did not know. Over 45% of the future keyword searchers rated it very easy, but none of the "no" group did, and only 16% of the "don't know" group did. One fourth of the "no" group rated it very difficult to learn, as did 16% of the "don't know" group, but less than 1% of the "yes" group rated it this way.

Table 74 Difficulty of Learning Keyword Searching by Future Keyword Sear
ing Plans

	1(Very Easy)	2	3	4(Very Difficul
Plan to do K= Searching	118(45.2%)	105(40.2%)	36(13.8%)	2(.8%)
Don't Plan to do K= Searching	0	1(25%)	2(50%)	1(25%)
Don't Know	4(16%)	11(44%)	6(24%)	4(16%)

Percentages do not always equal 100% due to rounding.

Only one of the statements about keyword help screens, under question 22, showed any significant variation with the factor of future keyword searching plans, and it was only significant to the .05 level. The second option under the question is "I refer to them only occasionally." Those who said they did not know if they would do a keyword search in the future were more likely to check this option than the other two groups: 17 of 28, or 60.7%, of them did, versus 90 of 268, or 33.6%, of the "yes" group and 1 of 4, or 25%, of the "no" group. (This last result is not very meaningful because of the small numbers.) It is impossible to say whether only occasional reference to the keyword help screens might be a cause of lack of knowledge leading to less certainty about future keyword searching, or a symptom of less frequent keyword searching use. It is also noteworthy that over a third of those who do plan to do a keyword search in the future refer to the screens only occasionally.

The last four questions on the survey attempt to assess satisfaction with keyword searching and attitudes towards it, and all of them vary significantly with future keyword searching plans. Question 24 asks how many of the materials listed in the respondent's last keyword search were useful. Although results are a bit mixed, particularly considering the low numbers in the "no" group, generally those who plan to do keyword searching in the future got more materials they could use from their last keyword search. (See Table 75.) Over 19% of the "don't know" group and 1 of 4 people in the "no" group said none of the materials were useful, versus only about 4% of the "yes" group. Almost 35% of the "yes" group said most of the materials were useful, versus none of the "no" group and over 15% of the "don't know" group. Higher percentages of the "no" and "don't know" group did, however, say that all of the materials had been useful.

Table 75 Amount of Useful Material from Last Keyword Search by Fut Keyword Plans

	None Useful	Some Useful	Most Useful	Almost All Useful
Plan to Do K= Searching	11(4.2%)	146(55.9%)	90(34.5%)	14(3.8%)
Don't Plan to Do K= Searching	1(25%)	2(50%)	0	1(25%)
Don't Know	5(19.2%)	14(53.8%)	4(15.4%)	3(11.5%)

Percentages do not always equal 100% due to rounding.

Question 25, which attempted assess how respondents felt about the results of their last keyword search, also showed significant variation related to future keyword searching plans. (See Table 76.) Only 3 people who answered this question said they did not plan to do a keyword search again, and they all circled 3 (4 being very unsatisfied.) Those who did not know if they would do a keyword search again were also comparatively unsatisfied; only a little over 7% of them said they were very satisfied with their last search, and 51.8% of them were on the "satisfied" half of the scale. This is in comparison to over 21% of the future keyword searchers being very satisfied and 74.3% of them being on the "satisfied" half of the scale.

Table 76 Satisfaction with Results of Last Keyword Search by Future Keyw Plans

	1(Very Satisfied)	2	3	4(Very Unsatisfie
Plan to Do K= Searching	55(21.4%)	136(52.9%)	53(20.6%)	13(5.1%)
Don't Plan to Do K= Searching	0	0	3(100%)	0
Don't Know	2(7.4%)	12(44.4%)	7(25.9%)	6(22.2%)

Percentages do not always equal 100% due to rounding.

Question 26 deals with attitudes toward k= searching, as compared to a=, t=, and s= searching, and it shows significant variation related to future keyword searching plans. (See Table 77.) One would expect those that say they will definitely do a keyword search in the future to evince a more positive attitude toward it, and this is generally true. Quite logically, only those who say they will definitely do a keyword search in the future find this type of searching superior to the others and do it most of the time. All of those who do not plan to do a keyword search in the future consider it only as a last resort. About the same percentage of the future keyword searchers and those that did not know their plans checked the response that keyword was best for subject searching, but a= and t= were still used when appropriate, but almost 50% of the "don't know" group consider keyword searching as a last resort, as opposed to over a quarter of the future keyword searchers.

Table 77 Attitudes toward Keyword Searching by Future Keyword Plans

	Keyword Superior	Keyword Best for Subject	Keyword Last Resort
Plan to Do K= Searching	47(18.4%)	139(54.3%)	70(27.3%)
Don't Plan to Do K= Searching	0	0	4(100%)
Don't Know	0	14(53.8%)	12(46.2%)

Percentages do not always equal 100% due to rounding.

The final question on the survey deals with perceived reasons for unsuccessful keyword searching, and the results show significant variation connected with future keyword searching plans. (See Table 78.) Those who planned to do keyword searching in the future were more likely to attribute unsuccessful keyword searches to the fact that they were not finding the right words for their topic than were those who did not know whether they would do keyword searching again, although this was a major reason for the "don't know" group, also. The "don't know" group were more likely than the future keyword searchers to attribute lack of success to not knowing enough about keyword searching. The "no" group split between the idea that their topic was too specific and that they did not know enough about keyword searching.

Table 78 Reasons for Unsuccessful Keyword Searching by Future Keyword Pl

	Topic Too Specific	Not Right Words	Don't Know Keyword	Nothing on LUIS
Plan to Do K= Searching	53(22.4%)	138(58.2%)	26(11%)	20(8.4%
Don't Plan to Do K= Searching	2(50%)	0	2(50%)	0
Don't Know	4(17.4%)	9(39.1%)	8(34.8%)	2(8.7%

Percentages do not always equal 100% due to rounding.

In summary, those who plan to do keyword searching in the future tended to perceive it as easier to learn. Those who were not sure if they would keyword search again were more likely to say they referred to keyword help screens only occasionally. Those who plan to do keyword searching in the future tended to find more of the materials listed in their last keyword search useful, were more satisfied with their last keyword search results, had a more positive attitude toward keyword searching, and were more likely to think that lack of success was owing to their failure to find the right words for their topic.

Ways of Learning of Keyword Searching Availability. Question 13 asks respondents how they learned about keyword searching availability, and gives them six options to choose from, plus "other." They could check all that apply, so percentages for each option are given out of 400 respondents.

Table 79 Ways of Learning of Keyword Searching Availability

From a Librarian	77(19.3%)
From a Library Instruction Class/Workshop	116(29%)
From a Library Announcement	35(8.8%)
From the Welcome to LUIS Screen	164(41%)
From a Friend, Professor or Person at the Next Terminal	74(18.5%)
I Was Not Aware that It Was Available.	33(8.3%)
Other	14(3.5%)

The first option, "from a librarian," has not shown any significant variation relations so far. It does show some significant variation with factors later in the survey. The first one is on one of the statements of keyword knowledge under question 16; this availability option shows variation significant to .05 related to 16h, about field limitation. Those who learned of keyword availability from a librarian were more likely to agree with the statement, less likely to disagree, and less likely not to know the answer. Thirty-two of 73, or 43.8%, of those who learned about keyword availability from a librarian agreed with the statement, 5, or 6.8%, disagreed, and 36, or 49.3%, did not know. For the rest of the respondents, 84 of 297, or 28.3%, agreed, 35, or 11.8% disagreed, and 178, or 59.9%, did not know. It is difficult to explain why those who learned from a librarian might know more about this particular aspect of keyword searching, since the librarians do not make a special attempt to emphasize it over other things.

The next significant variation also relates to one of the items on question 16, the last one, about the necessity of using Library of Congress Subject Headings for s= searching. Again, those who learned of keyword availability from a librarian were more likely to agree and less likely to disagree, but they were slightly more likely not to know the answer. Forty-six of 70, or 65.7%, of those who learned of keyword searching availability from a librarian, agreed with the statement, 3, or 4.3%, disagreed, and 21, or 30%, did not know the answer. For the rest of the respondents, 154 of 293, or 52.6%, agreed, 55, or 18.8%, disagreed, and 84, or 28.7%, did not know. The results for "don't know" were obviously very close. It is more understandable that those who learned of keyword searching from a librarian were more likely to know about use of LCSH, since librarians use this in answering questions very often.

Learning of keyword availability from a librarian also related to reasons for not doing keyword searching (question 17), producing a significant variation to the .05 level. It should be noted, however, that there were only 17 people who learned of keyword availability from a librarian and checked reasons for never having done a keyword search. (See Table 80.) A disproportionately higher number of them said keyword searching is too difficult to learn, and that there had not been staff available to assist them--a strange reason, considering they learned of keyword availabilty from a staff member. A disproportionately lower number said they had not done a keyword search because they had not been able to go to a library instruction session. Four people who had checked that they learned of keyword availability from a librarian also checked the option on question 17 of not having been aware of keyword searching--obviously a bit of a contradiction.

Table 80 Reasons for Never Having Done a Keyword Search by Learning Keyword Searching from a Librarian

	Learned from Librarian	Didn't Check Option
It is too difficult to learn.	2(11.8%)	5(4.9%)
It takes too long to learn.	0	3(2.9%)
I don't need to; other forms of searching are adequate for me.	4(23.5%)	30(29.4%)
I don't search very often, so I wouldn't remember how to do it.	2(11.8%)	10(9.8%)
I haven't been able to go to a library instruction session on it.	1(5.9%)	11(10.8%)
There hasn't been staff available to assist me.	3(17.6%)	1(1%)
I wasn't aware of this form of searching at all.	4(23.5%)	40(39.2%)
Its response time is too slow.	1(5.9%)	2(2%)

Percentages do not always equal 100% due to rounding.

The next item which shows significant variation related to learning of keyword searching availability from a librarian is understandable--on question 21, about methods used to learn keyword searching, one of the options is "information desk librarian assistance," and it shows significant variation on the factor in question. Nineteen of 65, or 29.2%, of those who learned of keyword availability from a librarian also received help in learning it from an information desk librarian. Only 15 of 235, or 6.4%, of the rest of the respondents did. Of course, this means that over 70% of those who learned of keyword searching availability from a librarian did not also get help in learning it from an information desk librarian.

Some of that 70% could be accounted for by the next option on question 21, "assistance from passing library staff member," which also varies significantly with the option of learning of keyword availability from a librarian. Twelve of 65, or 18.5%, of those who learned of keyword availability from a librarian received help in learning keyword searching from a passing library staff member. Only 10 of 235, or 4.3%, of the rest of the respondents checked this option.

The next significant correlation is also understandable; on question 23, about how the respondent comes up with terms for keyword searching, there is an option which says "ask a librarian," with answers that vary significantly with the factor in question. Sixteen of 65, or 24.6%, of those who learned of keyword search availability from a librarian also got keyword search terms from a librarian, as opposed to 18 of 235, or 7.7%, of the rest of the respondents.

The final significant correlation related to finding out about keyword searching availability from a librarian was on question 24, about how useful the results of the respondent's last keyword search were. (See Table 81.) Those who learned of keyword searching availability from a librarian were somewhat more likely than the rest of the respondents to find more of the results of their last keyword search useful. Over 47% of them found most or almost all of their results useful, versus 35.9% of the rest of the respondents. Almost 14% of the "from a librarian" group found almost all of their results useful, versus 4% of the other group.

Table 81 Amount of Useful Material from Last Keyword Search by Learning Keyword Searching from a Librarian

	None Useful	Some Useful	Most Useful	Almost All Useful
Learned from Librarian	4(6.2%)	30(46.2%)	22(33.8%)	9(13.8%)
Didn't Check Option	13(5.8%)	132(58.4%)	72(31.9%)	9(4%)

Percentages do not always equal 100% due to rounding.

The second option for learning of keyword searching availability is "from a library instruction class/workshop," which was checked by 116 people, or 29%. Almost a third of the test population seems a fairly good amount to have been reached by library instruction. This option shows quite a bit significant correlation with factors later in the survey, although it has only related significantly to two earlier factors, status and subject area. The status groups became less likely to have checked this option as one went from underclassmen to upperclassmen to graduate students to faculty. The subject areas most likely to have checked were HPER, business, and science.

This method of learning of keyword availability varied significantly when correlated with four of seven options under question 14, about instruction methods for keyword searching the respondent was aware of. The first one that varied along with the option in question was knowing of library handouts/announcements for keyword instruction. Sixty-two of 115, or 53.9%, of those who had learned of keyword searching availability from a library instruction class were aware of library handouts/announcements as a keyword search instruction method, hardly surprising since handouts on keyword/Boolean searching are often given out in library instruction classes. For the rest of the respondents, 67 of 283, or 23.7%, were aware of this instruction method.

The next option which showed significant variation related to learning of keyword searching availability from a library instruction class was the option of learning about how to do keyword searching from once-per-semester library instruction workshops. Those who had learned of keyword searching availability from a library instruction class were more likely to know of once-per-semester library instruction workshops than were the rest of the respondents--hardly surprising, since some of the people may have attended one of these workshops, and they are generally promoted during other library instruction classes. Nineteen of 115, or 16.5%, of those who learned of keyword searching availability from a library instruction class knew of once-per-semester library instruction workshops as a keyword searching instruction method. This is as opposed to 22 of 283, or 7.8%, of the rest of the respondents.

"Library instruction classes at instructor request" was another option for keyword searching instruction that showed results varying significantly with learning of keyword searching availability from a library instruction class. This, again, is hardly surprising, since the people were probably mostly in classes conducted at instructor request. Sixty-eight of 115, or 59.1%, of the group in question were aware of library instruction classes at instructor request as a method of keyword searching instruction, as opposed to 46 of 283, or 16.3%, of the other group.

Those who learned of keyword searching availability from a library instruction class showed significant variation on the factor of being aware of information desk assistance as a keyword searching instruction method. Those who learned of keyword searching availability from a library instruction class were more likely to be aware of information desk assistance as a keyword searching instruction method. Fifty-one of 115, or 44.3%, of those who learned of keyword searching from a library instruction class were aware of information desk assistance as a keyword searching instruction method, as opposed to 84 of 283, or 29.7%, of the rest of the respondents. This result is somewhat discouraging, since this is one thing that is emphasized in every library instruction session, and, apparently, over 50% of the respondents who had learned of keyword searching availability from a library instruction did not absorb information about this important library service.

Not unexpectedly, those who learned of keyword searching availability from library instruction classes showed significant variation on the final option under the question about keyword searching instruction methods, "none of the above." Only 3 of 115, or 2.6%, of the group in question checked this option, versus 70 of 283, or 24.7%, of the rest of the respondents. At least the vast majority of those who had learned of keyword searching availability through a library instruction class knew of some keyword searching instruction method.

Those who learned of keyword searching availability through a library instruction class showed significant variation on every single statement of keyword searching knowledge under question 16. The first statement is about keyword searching allowing access to a single word anywhere in LUIS. Those who learned of keyword searching availability from a library instruction class were more likely to agree with the statement (get it right), less likely to disagree with it, and less likely to say they did not know. (See Table 82.) Almost 20% more of them agreed with the statement than did the rest of the respondents. The percentages of the two groups that disagreed was very close, but slightly less for the group in question. Almost three times as high a percentage of the group that did not check off learning of keyword searching through a library instruction class said they did not know the answer on this statement.

Table 82 Answers to Question 16a by Learning of Keyword Searching fro
Library Instruction Class

	Agree	Disagree	Don't Know
Learned from Library Instruction	93(82.3%)	9(8%)	11(9.7%)
Didn't Check Option	170(63.4%)	25(9.3%)	73(27.2%)

Percentages do not always equal 100% due to rounding.

The second statement under question 16 is about keyword searching allowing access to a phrase anywhere in LUIS, and it also shows significant variation when looking at the factor of learning of keyword searching availability from a library instruction class. (See Table 83.) Performance on this question is worse for both groups, but the library instruction class group still performed better than those that did not check the option. The group in question had over 20% more of its members agree with the statement than the other group. Again, disagreement rates were very close, but the group in question disagreed slightly less. The library instruction class group had less than half the percentage of uncertainty ("don't know" answers) that the other group had.

Table 83 Answers to Question 16b by Learning of Keyword Searching fro

Library Instruction Class

	Agree	Disagree	Don't Know
Learned from Library Instruction	79(70.5%)	12(10.7%)	21(18.8%)
Didn't Check Option	131(49.2%)	30(11.3%)	105(39.5%)

Percentages do not always equal 100% due to rounding.

The third statement is about typing in k to get keyword help screens and a place to enter a long keyword search, and it also showed variation on the option of learning of keyword searching from a library instruction class, although only to the .05 level. (See Table 84.) The trend established above continues here, but to not as pronounced a level. Those who learned of keyword searchng availability from a library instruction class agreed with the statement at about a 15% higher rate than the rest of the respondents; they disagreed at an almost identical, but slightly lower, rate than the other group. About 15% fewer of them did not know the answer.

Table 84 Answers to Question 16c by Learning of Keyword Searching fro Library Instruction Class

	Agree	Disagree	Don't Know
Learned from Library Instruction	71(62.8%)	8(7.1%)	34(30.1%)
Didn't Check Option	126(47%)	21(7.8%)	121(45.1%)

Percentages do not always equal 100% due to rounding.

The fourth statement is about the default "and" operator in keyword searching, and the correlation with learning of keyword searching availability through a library instruction class returns to the .01 level of significant variation on this item. (See Table 85.) The established pattern holds true here, and is very pronounced. Almost 30% more of the group in question agreed with the statement than did the rest of the respondents. Disagreement rates are, again, very similar, but slightly higher for the respondents that did not check the option of learning of keyword searching availability from a library instruction class.

The group that learned of keyword searching availability from a library instruction class had a rate of uncertainty about half that of the rest of the respondents.

Table 85 Answers to Question 16d by Learning of Keyword Searching fro Library Instruction Class

	Agree	Disagree	Don't Know
Learned from Library Instruction	68(61.3%)	12(10.8%)	31(27.9%)
Didn't Check Option	90(33.8%)	32(12%)	144(54.1%)

Percentages do not always equal 100% due to rounding.

The fifth statement talks about Boolean operators, defining what they do, and those who learned of keyword searching availability from a library instruction class showed significant variation on this item. (See Table 86.) Almost 40% of those who had not learned through this method agreed with the statement, but over 60% of those who had learned through this method got it right. On this statement, however, those who had learned of keyword searching through a library instruction class disagreed at a slightly higher rate than the other group. They were still less likely to say they did not know the answer--less than a third, versus almost 55%.

Table 86 Answers to Question 16e by Learning of Keyword Searching fro Library Instruction Class

	Agree	Disagree	Don't Know
Learned from Library Instruction	68(61.3%)	8(7.2%)	35(31.5%)
Didn't Check Option	101(39.1%)	17(6.6%)	140(54.3%)

Percentages do not always equal 100% due to rounding.

The sixth statement is about keyword searching not accessing stopwords, and the group in question again shows significant variation based on this factor. (See Table 87.) The differences between the two groups is not quite as pronounced on this question as on the last one, but it is still definite on the "agree" and "don't know" answers. Over 60% of the group that learned of keyword searching from library instruction agreed with the statement versus over 42% of the rest of the respondents, and over 53% of the latter group did not know the answer, versus over a third of the group in question. Like the statement immediately above, however, the library instruction group disagreed with the statement at a slightly higher rate than the other group.

Table 87 Answers to Question 16f by Learning of Keyword Searching fro Library Instruction Class

	Agree	Disagree	Don't Know
Learned from Library Instruction	68(60.7%)	6(5.4%)	38(33.9%)
Didn't Check Option	110(42.5%)	11(4.2%)	138(53.3%)

Percentages do not always equal 100% due to rounding.

The seventh statement is about the positional operators, "adj" and "same," defining what they do. The respondents who had learned of keyword searching availability from library instruction also showed significant variation on this statement. (See Table 88.) Although their knowledgeability dropped quite a bit on this statement, so did that of the rest of the respondents. Only 40% of the group in question agreed with the statement, but only a little over 20% of the other group agreed with it. Those who learned of keyword availability from library instruction disagreed at a noticeably higher rate, too, though. On this question, over 50% of the group being looked at did not know the answer, but over three quarters of the rest of the respondents did not know.

Table 88 Answers to Question 16g by Learning of Keyword Searching fro Library Instruction Class

	Agree	Disagree	Don't Know
Learned from Library Instruction	44(40%)	8(7.3%)	58(52.7%)
Didn't Check Option	52(20.2%)	12(4.7%)	194(75.2%)

Percentages do not always equal 100% due to rounding.

The eighth statement is about field limiting using ".au.," ".ti.," and ".su.," and those who learned of keyword searching through library instruction showed significant variation on this question, also. The tendency is a bit mixed, however, with a comparatively small difference between the two groups on their agreement rate, and with the library instruction group disagreeing at a much higher rate than the other group. (See Table 89.) The library instruction group still showed uncertainty at almost a 20% lower rate than the other group.

Table 89 Answers to Question 16h by Learning of Keyword Searching fro Library Instruction Class

	Agree	Disagree	Don't Know
Learned from Library Instruction	42(37.8%)	20(18%)	49(44.1%)
Didn't Check Option	74(28.6%)	20(7.7%)	165(63.7%)

Percentages do not always equal 100% due to rounding.

The ninth statement under question 16 deals with using a dollar sign ($) for truncation, and this statement also shows significant variation on the factor of learning of keyword searching availability from a library instruction class. (See Table 90.) This question returns to more of a pattern of clearly better performance by the library instruction group. Over 50% of them agreed with the statement, versus over 32% of the other group. They still disagreed at a higher rate than the non-library instruction group, but the disparity was small. They said they did not know at a rate lower by about 20% than the other group.

Table 90 Answers to Question 16i by Learning of Keyword Searching fro Library Instruction Class

	Agree	Disagree	Don't Know
Learned from Library Instruction	56(50.5%)	8(7.2%)	47(42.3%)
Didn't Check Option	83(32.3%)	13(5.1%)	161(62.6%)

Percentages do not always equal 100% due to rounding.

The final statement under question 16 is about using Library of Congress Subject Headings to do correct s= searching, and it showed significant variation on the factor in question, but only to the .05 level. (See Table 91.) The disparity between the two groups is clearly not as great on this statement, which may indicate that those in library instruction classes are not picking up this important system attribute at as great a level as is desirable, and that the other group is picking it up perhaps more than one might think. Only a little over 10% more of the library instruction group agreed with the statement than the other group, and the disagreement rates were close, with the library instruction group slightly higher. Again, the uncertainty rate was only a little over 10% lower for the library instruction group.

Table 91 Answers to Question 16j by Learning of Keyword Searching fro Library Instruction Class

	Agree	Disagree	Don't Know
Learned from Library Instruction	69(63.3%)	18(16.5%)	22(20.2%)
Didn't Check Option	131(51.6%)	40(15.7%)	83(32.7%)

Percentages do not always equal 100% due to rounding.

The group that learned of keyword searching availability from a library instruction class clearly performed better than the rest of the respondents on the statements of keyword searching knowledge. Their worst performance came on the question about field limiting. They showed the same alarming tendency as was demonstrated earlier by those who had done keyword searching before--they were often more likely to go out on a limb and disagree with a statement than the rest of the respondents, who were more likely to admit uncertainty.

Those who learned of keyword searching availability from a library instruction class showed a significant variation on reasons for never having done a keyword search (question 17), although, as stated above on other correlations with this factor, the numbers are rather small. The significance in this instance only reached the .05 level. Only 19 people who learned of keyword searching availability from a library instruction class answered this question. (See Table 92.) Those who learned of keyword searching availability from a library instruction class were somewhat more likely to check that keyword searching is too difficult, or takes too long to learn, or that they don't need to learn it, since other forms of searching is adequate, or that they would not do it often enough to remember it. None of them checked not having been able to go to a library instruction session as a reason for not using it, but some of them did check that they were not aware of keyword searching at all! Again, the numbers on this question are so small that no conclusions can be drawn.

Table 92 Reasons for Never Having Done a Keyword Searching by Learning Keyword Searching from a Library Instruction Class

	Learned from Library Instruct.	Didn't Check Option
It is too difficult to learn.	2(10.5%)	5(5%)
It takes too long to learn.	2(10.5%)	1(1%)
I don't need to; other forms of searching are adequate for me.	8(42.1%)	26(26%)
I don't search very often, so I wouldn't remember how to do it.	3(15.8%)	9(9%)
I haven't been able to go to a library instruction session on it.	0	12(12%)
There hasn't been staff available to assist me.	1(5.3%)	3(3%)
I wasn't aware of this form of searching at all.	3(15.8%)	41(41%)
Its response time is too slow.	0	3(3%)

Percentages do not always equal 100% due to rounding.

The next factor to show significant variation when correlated with learning of keyword searching availability from a library instruction class is the first option under question 21, about what methods were used to learn keyword searching. The option of the LUIS welcome screen was much less likely to be chosen by the library instruction group than by the rest of the respondents. Thirty-five of 96, or 36.5%, of the library instruction group chose this option, versus 134 of 204, or 65.7%, of the rest of the respondents. The LUIS welcome screen has very little information about keyword searching, so those who had had library instruction related to it probably already knew more about keyword searching than the welcome screen could tell them.

The next significant variation, quite understandably, was on another option under this question, "library instruction class/workshop." Those who learned of the availability of keyword searching in library instruction classes were also very likely to have learned about how to do keyword searching in library instruction classes. Seventy-five of 96, or 78.1%, of those who learned of keyword searching availability in a library instruction class also checked library instruction class as a method of learning how to do it. Only 33 of 204, or 16.2%, of the rest of the respondents checked this option.

Significant variation related to learning of keyword searching from a library instruction class on another option under this question, the option of library handouts as a method for learning keyword searching, is also understandable, since handouts are usually given out to everyone attending library instruction classes. Still, a rather low percentage of those who learned of keyword searching availability from a library instruction class used library handouts to learn it--35 of 96, or 36.5%, versus 25 of 204, or 12.3%, of the rest of the respondents. Usage of handouts is not extending as far as one might hope, even among those attending library instruction classes.

Two options under question 23, about how the respondent comes up with terms for keyword searching, showed variation significant to .05 related to learning of keyword availability from a library instruction class. The sixth option, "ask a librarian," was somewhat more likely to be chosen by those who learned of keyword searching availability from a library instruction class--17 of 96, or 17.7%, versus 17 of 204, or 8.3% of the rest of the respondents. This is a minor indicator that the emphasis on asking librarians for help is getting through in instruction classes.

The seventh option under question 23 is using a library-produced bibliography to obtain terms for keyword searching. This option was chosen only by five respondents, but 4 of them had learned of keyword searching availability from a library instruction class. This represents 4.2% of 96 respondents who learned of keyword searching availability from a library instruction class, versus .5% of 204 who had not. Some classes receive library-produced bibliographies as part of their instructional handouts, so they are more likely to be exposed to them.

The third option under question 13, about how the respondent learned of keyword searching availability, is "from a library announcement." Thirty-five, or 8.8%, of all respondents checked this option--a low amount, but not surprising since the library has not done an ongoing publicity campaign about keyword searching, but a couple of "blitzes." Many of the respondents were probably not around campus when the campaigns were done.

This option has already shown significant variation related to three earlier factors studied--status, age range, and length of LUIS experience. Faculty members, those in the older age ranges, and those with more years of LUIS experience are more likely to have learned of keyword searching through a library announcement--quite logical, for the reason alluded to above; these people have been around campus longer and are more likely to have been exposed to a library publicity campaign. Some further significant variations are found with factors later in the survey, although it must be kept in mind that the number of respondents was small for this option.

A rather obvious relation appears between learning of keyword searching availability from a library announcement and being aware of library handouts/announcements as keyword searching instruction methods--option one under question 14. Twenty-seven of 35, or 77.1%, of those who learned of keyword searching availability from library announcements are also aware of library handouts/announcements as a keyword searching instruction method, versus 102 of 363, or 28.1%, of the rest of the respondents.

Another significant variation related to learning of keyword searching from a library announcement appears for the third option under question 14, which indicates the respondent is aware of library instruction workshops held once per semester as a keyword instruction method. The library announcement group has 10 of its 35 members, or 28.6%, aware of these workshops, versus 31 of 363, or 8.5%, of the rest of the respondents. The indications are that the library announcement group has been around campus longer, to hear of the twice-a-year workshops.

Those who learned of keyword searching availability through library announcements also showed variation on awareness of another option for keyword searching instruction, on-demand instruction appointments with librarians. Nine of 35, or 25.7%, of the library announcement group were aware of these appointments, versus 23 of 363, or 6.3%, of the rest of the respondents. This may indicate that those who have been around campus longer and/or are faculty are more likely to know about this instruction method.

Those who learned of the availability of keyword searching from a library announcement also showed variation significant to .05 on the factor of not being aware of any keyword searching instruction methods. Two of 73, or 2.7%, of those who were unaware of any keyword searching library instruction methods learned of the availability of keyword searching from a library announcement, versus 33 of 325, or 10.2%, of the rest of the respondents.

The next factor showing significant variation related to learning of keyword searching availability from a library announcement is reasons for never having done a keyword search, from question 17. (See Table 93.) The numbers are very small for this item, but those who learned of keyword searching availability from a library announcement were more likely than the rest of the respondents to say that keyword searching is too difficult to learn and that they have not been able to go to a library instruction class on it. None of them, of course, said that they were not aware of keyword searching at all, as a reason for not doing it.

Table 93 Reasons for Never Having Done a Keyword Search by Learning Keyword Searching from a Library Announcement

	Learned from Library Announce.	Didn't Check Option
It is too difficult to learn.	2(20%)	5(4.6%)
It takes too long to learn.	1(10%)	2(1.8%)
I don't need to; other forms of searching are adequate for me.	2(20%)	32(29.4%)
I don't search very often, so I wouldn't remember how to do it.	1(10%)	11(10.1%)
I haven't been able to go to a library instruction session on it.	4(40%)	8(7.3%)
There hasn't been staff available to assist me.	0	4(3.7%)
I wasn't aware of this form of searching at all.	0	44(40.4%)
Its response time is too slow.	0	3(2.8%)

Percentages do not always equal 100% due to rounding.

The final factor to show significant variation related to learning of keyword searching from a library announcement is an option under question 21, about methods used to learn keyword searching. The ninth option is library handouts, and those who learned of keyword searching availability from a library announcement were rather more likely than the rest of the respondents to have learned to do keyword searching by this method. Twelve of 25, or 48%, of the library announcement group checked this option, versus 48 of 275, or 17.5% of the rest of the respondents.

The next option for learning of keyword searching availability under question 13 is "from the Welcome to LUIS screen." There were 164 respondents who checked this, or 41%. The factors analyzed earlier which have shown variation on this option are subject area and age range. Over 40% of those in technology, humanities, social sciences, and education checked this option. Those who are in the younger age ranges are most likely to have checked this option.

Those who learned of keyword searching availability from the Welcome to LUIS screen show significant variation on the first option under question 14, about awareness of keyword searching instruction methods--being aware of library handouts/announcements. The Welcome to LUIS screen group were less likely to be aware of library handouts/announcements as a keyword instruction method--only 39 of 163, or 23.9%, versus 90 of 235, or 38.3%, of the rest of the respondents. Their method of learning of keyword searching availability did not also inform them of library handouts.

There was also significant variation in their knowledge of keyword help screens as an instruction method, the second option under question 14, tending in the opposite direction to their knowledge of library handouts. Those who learned of keyword availability through the Welcome to LUIS screen were more likely to be aware of the keyword help screens as an instruction method--110 of 163, or 67.5%, as opposed to 97 of 235, or 41.3%. It is somewhat encouraging that about 2/3 of those who learned of keyword searching from the opening screen also read and absorbed the part of the screen telling about the keyword help screens, and interesting that another 1/3 did not.

A significant variation also appears for the Welcome to LUIS screen group on the fourth option under question 14--being aware of library instruction classes held at instructor request as a keyword searching instruction method. They were less likely to be aware of this method than the rest of the respondents--35 of 163, or 21.5%, as opposed to 79 of 235, or 33.6%. Again, there is nothing about learning of keyword searching from the opening screen that would tell them of this instruction method.

The next place on the survey where learning of keyword searching from the Welcome to LUIS screen is connected to a significant variation is under question 21, about what methods the respondent used to learn keyword searching. The first option under question 21 is "LUIS welcome screen," and, obviously, the results for this are similar to the factor being discussed. The fact that only 116 of 143, or 81.2%, of those who learned of keyword searching availability from the Welcome to LUIS screen checked the option of learning to do keyword searching from this screen may indicate that some of the people who heard of keyword searching this way have not necessarily actually done it, and that some of those who have done it, did not consider that one of their instruction methods. The corresponding figures for the rest of the respondents are 53 of 157, or 33.8%.

Those who learned of keyword searching availability from the Welcome to LUIS screen also show significant variation on other instruction methods under question 21, the next one being the second option, LUIS keyword help screens. Above, it was found that the group in question is significantly more aware of this option, and now they are also evidently more likely to use it as a keyword instruction method. They are not as likely to use it, however, as they were to be aware of it--76 of 143, or 53.1%, of those who learned of keyword searching from the opening screen used keyword help screens as an instructional method, whereas 67.5% of them were aware of keyword help screens. Those who did not check the option of learning of keyword searching from the

Welcome to LUIS screen used the keyword help screens at the rate of 51 of 157, or 32.5%. It is interesting to note that, whereas learning about keyword searching availability from the Welcome to LUIS screen did evidence significant differences in reported awareness of and usage of keyword help screens, learning of keyword searching availability from a library instruction class made no such difference, despite the emphasis on the help screens in classes.

The next option under question 21 where learning of keyword searching availability from the opening screen made a significant difference, although only to the .05 level, was the third option of learning to do keyword searching by trial and error. The Welcome to LUIS screen group was somewhat more likely to check this option than the rest of the respondents--88 of 143, or 61.5%, versus 78 of 157, or 49.7%, for the rest of the respondents. This is not surprising, since this group was less likely to have been exposed to information about many other instructional methods by reading the opening screen.

The last option under question 21, about instruction methods used, where learning of keyword availability from the Welcome to LUIS screen is related to a significant variation is the fourth option, a library instruction class/workshop used as a keyword instruction method. The Welcome to LUIS screen group is less likely to have used this instruction method than the rest of the respondents--35 of 143, or 24.5%, versus 73 of 157, or 46.5%, of the rest of the surveyed group. As mentioned above, there is nothing about learning of keyword searching availability by this method that would tell users about, or expose them to, library instruction classes.

Learning of keyword searching availability from the Welcome to LUIS screen is related to variation significant to .05 on the last two questions on the survey, questions 26 and 27. Question 26 asks the user to compare k= searching to a=, t=, and s= searching by choosing one of three statements they most agree with. The Welcome to LUIS screen group shows a slightly more negative attitude toward k= searching than the rest of the respondents on this question. (See Table 94.) Both groups chose the second, "middle of the road" statement at about the same rate, saying that k= searching was better for subject searching, but a= and t= searching were still used when appropriate. The Welcome to LUIS group was, however, less likely than the rest of the respondents to check the first statement, saying k= searching is generally superior and used most of the time. They were more likely to see keyword searching is a last resort. This tendency may relate to the likelihood that they are not as aware of and did not use as many different instruction methods as some other groups.

Table 94 Comparison of Keyword Searching to a=,t=,s= by Learning of Keyw
Searching from the Welcome to LUIS Screen

	K= Superior	K= Best for Subject	K= Last Res
Learned from Welcome Scrn.	16(11.6%)	73(52.9%)	49(35.5%)
Didn't Check Option	31(20.9%)	80(54.1%)	37(25%)

Percentages do not always equal 100% due to rounding.

Question 27, asking the user to chose a reason why his/her keyword searching is sometimes unsuccessful, also shows variation related to learning of keyword searching from the Welcome to LUIS screen, significant to .05. (See Table 95.) Interestingly enough, the Welcome to LUIS group is more likely than the rest of the respondents to attribute lack of success to a too specific topic, and less likely to attribute it to not knowing enough about how to do a keyword search. They do not seem to perceive themselves as in need of more instruction, which is disquieting since they have shown themselves as less likely to be aware of and use a variety of instruction methods.

Table 95 Reasons for Unsuccessful Keyword Search by Learning of Keyw Searching from the Welcome to LUIS Screen

	Topic too Specific	Not Right Words	Don't Know about Keyword	No LU
Learned from Welcome Scrn.	37(29.6%)	67(53.6%)	13(10.4%)	8(
Didn't Check Option	22(15.8%)	80(57.6%)	23(16.5%)	14(

Percentages do not always equal 100% due to rounding.

The next option under question 13 to be correlated is learning of the availability of keyword searching from a friend, professor, or person at the next terminal. Seventy-four respondents checked this option, 18.5% of the total. This is an appreciable amount, but librarians who observe what goes on with patrons learning computer systems in the library might even expect the amount to be higher.

The only factor this option has shown significant correlation with earlier in the questionnaire is age range, and that was only to the .05 level. The older age groups, over 41, tended not to check this option as much, and the younger age group, 18-22, tended to check it most. This factor showed significant variation with only two further factors in the survey.

Those who learned of keyword searching availability from a friend, professor, or person at the next terminal showed variation significant to .05 on the first statement of keyword knowledge on question 16. The statement says that keyword searching makes it possible to search for a single word anywhere in LUIS. Those who learned of keyword searching availability through the method under question performed better on this statement by agreeing with it more, disagreeing with it less, and being less likely not to know the answer. (See Table 96.) This group seems to have absorbed this basic fact about keyword searching to a great extent, but there are no other significant variations for them on question 16.

Table 96 Answers to Question 16a by Learning of Keyword Searching fro Friend, Professor, or Person at Next Terminal

	Agree	Disagree	Don't Know
Learned from Friend, etc.	59(83.1%)	3(4.2%)	9(12.7%)
Didn't Check Option	204(65.8%)	31(10%)	75(24.2%)

Percentages do not always equal 100% due to rounding.

The only other factor on the survey where learning of keyword searching availability from a friend, professor, or person at the next terminal made a significant difference was a not unexpected one: on question 21, one method of learning keyword searching listed is "friend or someone at next terminal," and these two factors show significant correlation. Thirty-two of 61, or 52.5%, of those who learned of keyword searching availability from a friend, professor, or someone at the next terminal also used a friend or someone at the next terminal to learn about how to do keyword searching. This compares to only 20 of 239, or 8.4%, of the rest of the respondents.

The final option under question 13 is not to have learned of the availability of keyword searching at all (until the questionnaire): "I was not aware that it was available." Thirty-three respondents checked this option, or 8.3%. Although this is a small number, it has shown some significant variation on three earlier factors: status, subject area, and age range. Faculty members tended to check this option more. Respondents in nursing, HPER, and science also tended to check it more, although variation was significant only to .05. The older age ranges, those over 40, also tended to check it more. This option shows significant further variation with factors later in the survey.

Those who were not aware of keyword searching showed several unsurprising significant variations on question 14, about awareness of different methods of keyword searching instruction. Obviously, there should have been even more variation than will appear, since those who were unaware of keyword searching should not be aware of keyword searching instruction methods, but some of them may have checked general library instruction methods with which they were familiar. The first option is library handouts/announcements, and those who were not aware of keyword searching were generally also not aware of this as a keyword instruction method. Two of 33, or 6.1%, of the group in question checked this option, versus 127 of 365, or 34.8%, of the rest of the respondents.

The next option under question 14 was awareness of keyword help screens as a keyword searching instruction method, and those who were unaware of keyword searching were also generally unaware of these, although 4 of the latter group still checked this option. These 4 of 33 represented 12.1% of those unaware of keyword searching, but 203 of 365, or 55.6%, of the rest of the respondents knew of keyword help screens as a keyword searching instruction method.

The respondents who were unaware of keyword searching availability showed variation significant to .05 on being aware of library instruction classes held at instructor request as a keyword searching instruction method. Four of the 33 people in question, or 12.1%, were aware of this instruction method, versus 110 of 365, or 30.1%, of the rest of the respondents. A bit perplexing is the fact that those who say they were unaware of keyword searching show no significant variation on being aware of library workshops held once per semester, on-demand instruction appointments with librarians, and information desk assistance, as keyword searching instruction methods. Again, they may have been aware of these as library instruction methods in general and checked them off.

The option of not being aware of keyword searching availability does show significant correlation with the last option under question 14--not being aware of any method of keyword search instruction. Two-thirds, 22 of 33, or 66.7%, of those unaware of keyword searching checked "none of the above" on question 14, versus 51 of 365, or 14%, of the rest of the respondents.

Not unexpectedly, being unaware of the existence of keyword searching on LUIS correlates significantly with responses to all of the statements of keyword knowledge under question 16. The group of respondents who were unaware of keyword searching at all could not be expected to know much about how it works, and would probably be more likely to say they did not know the answer and/or base agreement or disagreement on guessing. The first statement of keyword knowledge, about keyword searching allowing searching for a single word, produced a response of uncertainty in the majority of those unaware of keyword searching. Four of the 30 people in the group that answered the question, or 13.3%, agreed with the statement, 3, or 10%, disagreed, and 23, or 76.7%, said they did not know. This is as compared to 259 of 351, or 73.8%, of the rest of the respondents agreeing, 31 of 351, or 8.8%, disagreeing, and 61 of 351, or 17.4%, saying they did not know.

The second statement under question 16 is about keyword searching allowing access to a phrase anywhere in LUIS, and it also showed significant variation for those who were previously unaware of keyword searching's availability. Only 1 of 30 (3.3%) people agreed with the statement, versus 209 of 348, or 60.1%, of the rest of the respondents. Two of 30, or 6.7%, disagreed with the statement, and fully 90%, or 27, said they did not know the answer. The corresponding figures for the rest of the respondents were 40 of 348, or 11.5%, disagreeing, and 99 of 348, or 28.4%, not knowing. Although a lower percentage of the group in question disagreed with this statement, this does not seem to be a positive indicator of knowledge in this case, considering the rest of the results.

The third statement under question 16 is about typing in k to get keyword help screens and an entry screen for long keyword searches, and, unsurprisingly, those who were unaware of keyword searching did noticeably worse on this question than the rest of the respondents. Four of 30, or 13.3%, of the group in question agreed with the statement, versus 193 of 351, or 55%, of the rest of the respondents. One person, 3.3%, of those who were unaware of keyword searching disagreed with the question, versus 28, 8%, of the rest of the respondents. Again, though, this does not indicate a higher level of knowledge on the part of the group in question, since 25, or 83.3%, of them did not know the answer at all, versus 130 of 351, or 37%, of the rest of the respondents.

The fourth statement under question 16 is about the implied "and" in a statement without operators, saying that if a phrase is entered with keyword searching, the words could be anywhere in the record, not necessarily right together. Those who were unaware of keyword searching performed significantly worse than others on this statement also, although their performance was a bit better than on earlier statements. Five of 30, or 16.7%, of them agreed with the statement, as opposed to 153 of 347, or 44.1%, of the rest of the respondents. None of the group in question disagreed with the statement, versus 44, or 12.7%, of the rest of the respondents (which, again, does not probably indicate higher knowledge levels.) Twenty-five, or 83.3%, of the group in question did not know the answer, versus 150, or 43.2%, of the rest of the respondents.

Boolean operators are the topic of the fifth statement under question 16, and, again, those who were previously unaware of keyword searching performed worse on this question than the rest of the survey population, although they also again disagreed at a lower rate than the rest of the respondents. Two of 30, or 6.7%, agreed with the statement, 1, or 3.3%, disagreed with it, and 27, or 90%, did not know the answer. The corresponding figures for the rest of the survey population were 167 of 339, or 49.3%, agreeing, 24, or 7.1%, disagreeing, and 148, or 43.7%, not knowing.

The sixth statement under question 16 is about stopwords, saying that LUIS will not search for certain common words, such as "of," "the," and "in." Again, those who were previously unaware of keyword searching did not perform as well on this statement as the rest of the respondents, although they disagreed at a slightly lower rate than the rest of the survey population. Four of 29, or 13.8%, agreed with the statement, 1, or 3.4%, disagreed, and 24, or 82.8%, did not know the answer. The rest of the respondents agreed at the rate of 174 of 342, or 50.9%, disagreed at the rate of 16, or 4.7%, and professed uncertainty at the rate of 152, or 44.4%.

The seventh statement under question 16 is about positional operators, and, for a change, shows significant variation only to the level of .05 for those who were previously unaware of keyword searching. They still generally performed worse than others, although the others did not perform very well either. Those unaware of keyword searching agreed with the statement at a rate of 2 of 28, or 7.1%, versus 94 of 340, or 27.6%, of the rest of the respondents. They disagreed with the statement at a rate of 1, or 3.6%, versus 19, or 5.6%, of the rest of the survey population. The group in question admitted uncertainty at a rate of 25 of 28, or 89.3%, as opposed to 227, or 66.8%, of the rest of the respondents.

The eighth statement under question 16, about field limiting, also only showed significant variation to the .05 level for those previously unaware of keyword searching availability. Neither group performed very well on this question, but the group in question generally did worse. Five of 28, or 17.9%, of them agreed with the statement, none of the group disagreed with it, and 23, or 82.1%, did not know the answer. The corresponding figures for the rest of the survey population were 111 of 342, or 32.5%, agreeing, 40, or 11.7%, disagreeing, and 191, or 55.8%, not knowing.

The ninth statement, about truncation, reverts to the pattern of significant variation to .01 for those who were previously unaware of keyword searching unavailability. They again did much worse than the rest of the respondents on this statement, although disagreeing at a slightly lower rate. Two of 28, or 7.1%, of the group in question agreed with the statement, versus 137 of 340, or 40.3%, of the rest of the respondents. One, or 3.6%, of the group in question disagreed, as opposed to 20, or 5.9%, of the rest of the survey population, but 25, or 89.3%, of the group in question did not know the answer, versus 183, or 53.8%, of the rest of the respondents.

The final statement under question 16 is not directly about keyword searching, but says that, to do correct s= searching, one must have a Library of Congress Subject Heading. Those who were previously unaware of keyword searching availability still did poorly on this statement, but not quite as poorly as before, and some of them may simply have been in a pattern of saying they did not know the answer by this point in question 16. The figures for those previously unaware of keyword searching are as follows: 11 of 28, or 39.3%, agreeing, 2, or 7.1%, disagreeing, and 15, or

53.6%, uncertain. The corresponding figures for the rest of the survey population are 189 of 335, or 56.4%, agreeing, 56, or 16.7%, disagreeing, and 90, or 26.9%, not knowing.

Those who were previously unaware of keyword searching also show significant variation on reasons for not having done keyword searching, although, again, the numbers are very small on different responses. This is not surprising, since one of the reasons for not having done keyword searching is not having been aware of it at all, although not all of the respondents in question checked this option. (See Table 97.) Over 75% of them did check this option, as did over 20% of the rest of the respondents, showing some inconsistency in their questionnaire responses. The other item checked most often by the group in question was that other forms of searching are adequate and keyword searching is not needed, although this was checked off even more by the rest of the survey population.

Table 97 Reasons for Never Having Done a Keyword Search by Not Being Aw
that Keyword Searching Was Available

	Not Aware of Keyword	Didn't Check Option
It is too difficult to learn.	1(2.9%)	6(7.1%)
It takes too long to learn.	0	3(3.6%)
I don't need to; other forms of searching are adequate for me.	5(14.3%)	29(34.5%)
I don't search very often, so I wouldn't remember how to do it.	0	12(14.3%)
I haven't been able to go to a library instruction session on it.	2(5.7%)	10(11.9%)
There hasn't been staff available to assist me.	0	4(4.8%)
I wasn't aware of this form of searching at all.	27(77.1%)	17(20.2%)
Its response time is too slow.	0	3(3.6%)

Percentages do not always equal 100% due to rounding.

Although two of the respondents in question did continue to answer the survey from this point, they should not have, and their responses would not be meaningful. This, therefore, is the end of the discussion of correlations of responses to question 13, about ways of becoming aware of keyword searching availability. The two responses most checked were learning from a library/instruction class workshop and from the Welcome to LUIS screen, but other responses showed some interesting significant variations.

Those who learned of keyword searching availability from a librarian were more likely to find more of the materials obtained in their last keyword search useful. Those who learned from a library instruction class/workshop were more aware of four options for instruction under question 14: library handouts, library workshops held once per semester, library instruction classes at instructor request, and information desk assistance. They also performed significantly better than the rest of the survey population on all statements of keyword knowledge on question 16.

Those who learned of the availability of keyword searching from the Welcome to LUIS screen were more likely to be aware of keyword help screens as an instruction method, and less likely to be aware of library handouts and library instruction classes at instructor request. They are more likely to have learned to do keyword searching from the opening screen, the keyword help screens, and trial and error, and less likely to have learned it from library instruction classes. They have a slightly more negative attitude toward keyword searching, and they are more likely to attribute lack of success in keyword searching to having a too-specific topic. It is also worth noting that they did not show significant differences on the test of keyword knowledge, either positive or negative. Finally, those who were unaware of keyword searching at all showed a number of expected significant variations, including performing poorly on the test of keyword knowledge.

Awareness of Keyword Searching Instruction Methods. Question 14 asks respondents which instruction methods for keyword searching they were aware of, before that point; they could check more than one. There were seven options listed, and the responses for them follow in Table 98. The methods people were most aware of were keyword help screens, information desk assistance and library handouts. They could check all that apply, so percentages for each option are given out of 400 respondents.

Table 98 Awareness of Keyword Searching Instruction Methods

Library Handouts/Announcements	129(32.3%)
Keyword Help Screens	207(51.8%)
Library Workshops Held Once per Semester	41(10.3%)
Library Instruction Classes at Instructor Request	114(28.5%)
On-Demand Instruction Appointments with Librarians	32(8%)
Information Desk Assistance	135(33.8%)
None of the Above	73(18.3%)

The first option is library handouts/announcements, and it has already shown some significant variation on factors studied earlier in this paper. On question 6, those who used LUIS more frequently were more likely to be aware of library handouts/announcements as a keyword instruction method. On question 13, those who learned of the availability of keyword searching from a library instruction class and from a library announcement were significantly more aware of this option; those who learned from the Welcome to LUIS screen and who were not aware of keyword searching were significantly less aware of it. This option shows quite a bit of variation with factors later in the survey, also.

Correlation was checked between this option and other options on question 14, to see if those who were aware of one option were more or less likely to be aware of certain others. Those who were aware of library handouts/announcements were significantly more likely to be also aware of all of the other keyword instruction methods. Eighty-six of 129, or 66.7%, of those who were aware of library handouts/announcements were aware of keyword help screens, versus 121 of 269, or 45%, of the rest of the survey population. Twenty-six of 129, or 20.2%, of those who were aware of library handouts/announcements were aware of library workshops held once per semester, as opposed to 15 of 269, or 5.6%, of the rest of the respondents.

The library handouts/announcements group was more likely to be aware of library instruction classes held at instructor request: 69 of 129, or 53.5%, versus 45 of 269, or 16.7%, of the rest of the respondents. They were also more likely to be aware of on-demand instruction appointments with librarians, at the rate of 21 of 129, or 16.3%, versus 11 of 269, or 4.1%, of the rest of the survey population. The final method, information desk assistance, was also checked significantly more by those who checked the first option: 66 of 129, or 51.2%, as opposed to 69 of 269, or 25.7%. It is difficult to say what these correlations mean, since handouts do not tell of all of these other methods of instruction. One possible source of learning of all of these methods is library instruction classes, but not all of the respondents in question were aware of these.

Those who were aware of library handouts/announcements as a keyword instruction method showed significant differences in response on nine of ten statements of keyword knowledge on question 16, five of them significant to .01 and four of them significant to .05. As mentioned above, it is difficult to know whether to attribute this to the library handouts/announcements themselves, or to some other intervening factor, such as library instruction; a combination of factors is likely.

The first statement under question 16, about using keyword searching to access a single word in LUIS, shows significant variation to the level of .01 for those who were aware of library handouts/announcements as a keyword searching instruction method. (See Table 99.) They definitely performed better: those who were aware of this method agreed more with the statement (got it right), disagreed slightly less, and were less uncertain of the answer, than the rest of the respondents.

Table 99 Answers to Question 16a by Being Aware of Library Handouts/ nouncements as a Keyword Searching Instruction Method

	Agree	Disagree	Don't Know
Aware of Library Handouts/Ann.	100(79.4%)	11(8.7%)	15(11.9%)
Didn't Check Option	163(63.9%)	23(9%)	69(27.1%)

Percentages do not always equal 100% due to rounding.

The second statement under question 16 is about keyword searching allowing access to a phrase anywhere in LUIS, and variation significant to .01 appears for those who were aware of library handouts/announcements as a keyword searching instruction method. (See Table 100.) This group generally performed better than the rest of the respondents, although the trend reappears of a group that has probably received more information about keyword searching disagreeing with the (correct) statement at a higher rate than the rest of the respondents. This appeared earlier for those who had learned of keyword searching availability through a library instruction class. In this case, those who were aware of library handouts/announcements as a keyword searching instruction method still agreed at a higher rate with the statement, and were less uncertain about it, but they disagreed at a slightly higher rate than the rest of the survey population.

Table 100 Answers to Question 16b by Being Aware of Library Handouts/ nouncements as a Keyword Searching Instruction Method

	Agree	Disagree	Don't Know
Aware of Library Handouts/Ann.	84(66.7%)	15(11.9%)	27(21.4%)
Didn't Check Option	126(50%)	27(10.7%)	99(39.3%)

Percentages do not always equal 100% due to rounding.

The third statement under question 16, about typing in k to get keyword help screens and a long keyword search entry screen, is the only statement that showed no significant variation for those who were aware of library handouts/announcements as a keyword searching instruction method. The fourth statement is about the implied "and" in searching a phrase, and it showed variation significant to .01 for the group in question. (See Table 101.) Again, they performed generally better than the rest of the respondents, but disagreed with the statement at a slightly higher rate. They did agree with it at a higher rate, and were less likely to answer "don't know."

Table 101 Answers to Question 16d by Being Aware of Libr Handouts/Announcements as a Keyword Searching Instruction Method

	Agree	Disagree	Don't Know
Aware of Library Handouts/Ann.	68(54.8%)	16(12.9%)	40(32.3%)
Didn't Check Option	90(35.6%)	28(11.1%)	135(53.4%)

Percentages do not always equal 100% due to rounding.

The fifth statement under question 16 is about Boolean operators and describes what they do; those who were aware of library handouts/announcements as a keyword searching instruction method performed significantly differently on this statement than did the rest of the respondents, to the .01 level. (See Table 102.) The message about Boolean operators seems to have gotten through fairly well to this group, because they definitely performed better than others on this statement, agreeing at a much higher rate, disagreeing at a noticeably lower rate, and indicating uncertainty at a much lower rate. The keyword/Boolean searching handout does emphasize Boolean operators quite a bit, and is probably the reason for some of this. Library instruction could be responsible for some of it, but those who learned of keyword searching availability through a library instruction class actually disagreed with this statement at a slightly higher rate than the rest of the respondents, although they did perform better than the group currently in question in "agree" and "don't know."

Table 102 Answers to Question 16e by Being Aware of Library Handouts/ nouncements as a Keyword Searching Instruction Method

	Agree	Disagree	Don't Know
Aware of Library Handouts/Ann.	72(60%)	4(3.3%)	44(36.7%)
Didn't Check Option	97(38.9%)	21(8.4%)	131(52.6%)

Percentages do not always equal 100% due to rounding.

The sixth statement under question 16 is about stopwords in keyword searching, and those who were aware of library handouts/announcements as a keyword searching instruction method showed significant variation on this item, but only to the .05 level. They still performed better than the rest of the respondents, but not to the same extent as earlier. (See Table 103.) They agreed with the statement at about a 15% higher rate than the rest of the respondents, disagreed at about a 2% lower rate, and indicated uncertainty at about a 15% lower rate.

Table 103 Answers to Question 16f by Being Aware of Library Handouts/ nouncements as a Keyword Searching Instruction Method

	Agree	Disagree	Don't Know
Aware of Library Handouts/Ann.	73(58.9%)	4(3.2%)	47(37.9%)
Didn't Check Option	105(42.5%)	13(5.3%)	129(52.2%)

Percentages do not always equal 100% due to rounding.

The seventh statement under question 16 is about positional operators, and those who were aware of library handouts/announcements as a keyword searching instruction method showed significant variation on this statement to the .05 level. (See Table 104.) They did not perform very well on this statement, but the rest of the respondents generally performed even worse. The group in question did disagree with the statement at a higher rate than the rest of the respondents, but they also agreed with it a higher rate, and indicated uncertainty at a lower rate.

Table 104 Answers to Question 16g by Being Aware of Library Handouts/ nouncements as a Keyword Searching Instruction Method

	Agree	Disagree	Don't Know
Aware of Library Handouts/Ann.	41(33.6%)	8(6.6%)	73(59.8%)
Didn't Check Option	55(22.4%)	12(4.9%)	179(72.8%)

Percentages do not always equal 100% due to rounding.

The eighth statement under question 16 is about field limiting, and those who were aware of library handouts/announcements as a keyword searching instruction method again showed variation on this statement significant only to .05. (See Table 105.) The group in question performed better than the rest of the respondents, but not to a very high degree. They agreed a little over 10% more than the rest of the respondents, disagreed only slightly less, and indicated uncertainty a little over 10% less than the rest of the survey population.

Table 105 Answers to Question 16h by Being Aware of Library Handouts/

nouncements as a Keyword Searching Instruction Method

	Agree	Disagree	Don't Know
Aware of Library Handouts/Ann.	49(39.8%)	13(10.6%)	61(49.6%)
Didn't Check Option	67(27.1%)	27(10.9%)	153(61.9%)

Percentages do not always equal 100% due to rounding.

The ninth statement under question 16 is about truncation, and those who were aware of library handouts/announcements as a keyword searching instruction method return to giving answers that show a higher significant difference, to the .01 level. (See Table 106.) Again, the group in question performed better in all areas, agreeing almost 14% more, disagreeing slightly less, and indicating uncertainty over 17% less.

Table 106 Answers to Question 16i by Being Aware of Library Handouts/
nouncements as a Keyword Searching Instruction Method

	Agree	Disagree	Don't Know
Aware of Library Handouts/Ann.	58(47.2%)	10(8.1%)	55(44.7%)
Didn't Check Option	81(33.1%)	11(8.9%)	153(62.4%)

Percentages do not always equal 100% due to rounding.

The final statement is not directly about keyword searching, but is about only using Library of Congress Subject Headings for s= searching. Those who were aware of library handouts/announcements as a keyword searching instruction method again showed significant variation on the answer to this question, although only to .05. (See Table 107.) The group in question showed mixed results on this statement, agreeing with it at about a 10% higher rate and indicating uncertainty at about a 13% lower rate, but disagreeing with it over 3% more than the rest of the respondents. This result would agree with the idea that many of these respondents went through library instruction, as will be discussed later, since this fact is not in the keyword/Boolean handout.

Table 107 Answers to Question 16j by Being Aware of Library Handouts/
nouncements as a Keyword Searching Instruction Method

	Agree	Disagree	Don't Know
Aware of Library Handouts/Ann.	74(61.7%)	22(18.3%)	24(20%)
Didn't Check Option	126(51.9%)	36(14.8%)	81(33.3%)

Percentages do not always equal 100% due to rounding.

Those who were aware of library handouts/announcements as a keyword searching instruction method showed signficant variation on reasons for not doing a keyword search, although the numbers are comparatively small, since only 24 members of the group apparently had not done a keyword search and filled out question 17. The reasons chosen most often by the group in question were that keyword searching is too difficult, they don't need to learn it, since other search forms are adequate, and they have not been able to attend a library instruction class on it. (See Table 108.) The most common reasons for the rest of the respondents were that they don't need to learn keyword searching, they would not do it often enough to remember how, and they were not aware of it at all. It is difficult to draw conclusions from this question, although some of the results are logically seen; for example, the group in question should not have a high number of "not aware of this form of searching" answers.

Table 108 Reasons for Never Having Done a Keyword Search by Being Aware Library Handouts/Announcements as a Keyword Searching Instruction Method

	Aware of Lib. Handouts/Ann.	Didn't Check Option
It is too difficult to learn.	5(20.8%)	2(2.1%)
It takes too long to learn.	2(8.3%)	1(1.1%)
I don't need to; other forms of searching are adequate for me.	5(20.8%)	29(30.5%)
I don't search very often, so I wouldn't remember how to do it.	3(12.5%)	9(9.5%)
I haven't been able to go to a library instruction session on it.	6(25%)	6(6.3%)
There hasn't been staff available to assist me.	1(4.2%)	3(3.2%)
I wasn't aware of this form of searching at all.	1(4.2%)	43(45.3%)
Its response time is too slow.	1(4.2%)	2(2.1%)

Percentages do not always equal 100% due to rounding.

Those who were aware of library handouts/announcements as a keyword searching instruction method show significant variation on three options under question 21, about what methods were actually used to learn to do keyword searching. The first variation was on the third option, trial and error, and was only significant to .05. A bit surprisingly, the group in question was somewhat more likely than the rest of the respondents to check this option. Seventy-one of 111, or 64%, of them checked it, versus 95 of 189, or 50.3%, of the rest of the survey population.

The next option where those who were aware of library handouts/announcements as a keyword searching instruction method showed significant variation on question 21 was the fourth one, "library instruction class/workshop." The results on this correlation bear out earlier suppositions that a good proportion of this group must have taken a library instruction class, but that not all of them had. Fifty-eight of 111, or 52.3%, of the group in question checked this option, versus 50 of 189, or 26.5%, of the rest of the respondents.

The final option on question 14 where significant variation was shown on the factor of being aware of library handouts/announcements as a keyword searching instruction method is the ninth one, "library handouts"--not a surprising correlation. What is surprising is that the vast majority of those who said they were aware of library handouts/announcements as an instruction method did not actually use them to learn keyword searching, although a higher percentage of them used handouts than did the rest of the respondents. Thirty-nine of 111, or 35.1%, of the group in question used handouts to learn keyword searching, as opposed to 21 of 189, or 11.1%, of the rest of the respondents. These correlations with question 14 paint a picture of a substantial portion of the survey respondents knowing about library handouts/announcements as a keyword searching instruction method, over half of them probably learning of them through library instruction classes, but only a third of them actually using the handouts. The rest probably at least saw the handouts, as they learned keyword searching by trial and error.

The next option under question 14, about awareness of different instruction methods, is "keyword help screens," and 120 (30%) of the respondents checked this option. Earlier in the study this factor has shown significant variation with frequency of LUIS use, with learning of the availability of keyword searching from the Welcome to LUIS screen, and with not being aware of keyword searching availability at all. Those who use LUIS more frequently tend to be more aware of keyword help screens as a keyword instruction method, as are those who learned of keyword searching availability from the Welcome to LUIS screen. Those who were unaware of keyword searching at all also tended to be unaware of the keyword help screens.

The group that was aware of keyword help screens as a keyword searching instruction method showed significant variation on being aware of two other instruction methods. They were more aware, significant to .05, of on-demand instruction appointments with librarians--22 of 207, or 10.6%, versus 10 of 191, or 5.2%, of the rest of the respondents. They were also more aware of information desk assistance--84 of 207, or 40.6%, as opposed to 51 of 191, or 26.7%. If these peoples' exposure to LUIS and keyword tends to be more at the terminal than in library instruction classes, these are likely other methods of instruction they would be aware of.

Those who were aware of keyword help screens as an instruction method performed significantly differently on every statement of keyword knowledge on question 16, and variation on all but two statements was significant to the .01 level. The first statement is about keyword searching allowing access to a single word anywhere in LUIS. Those who were aware of keyword help screens performed somewhat better on this statement, agreeing with it more and indicating uncertainty less, but they disagreed with the statement noticeably more--over 12% of them, versus 5.5% of the others. (See Table 109.) It is disquieting to find this many respondents feeling certain enough to disagree with one of the basic facts about keyword searching, and it seems to bear out a tendency referred to earlier. Some of those whom one can suppose to have been instructed meaningfully about keyword searching firmly absorbed the wrong concepts.

Table 109 Answers to Question 16a by Being Aware of Keyword Help Screens a Keyword Searching Instruction Method

	Agree	Disagree	Don't Know
Aware of Keyword Help Screens	150(75.4%)	24(12.1%)	25(12.6
Didn't Check Option	113(62.1%)	10(5.5%)	59(32.4

Percentages do not always equal 100% due to rounding.

The second statement under question 16 is about using keyword searching to search for a phrase anywhere in LUIS, and those who were aware of keyword help screens as a keyword searching instruction method performed significantly differently on this statement, also. (See Table 110.) The trend is a bit better on this statement than on the first statement; the keyword help screen group definitely performs better than the rest of the respondents. They agree at a noticeably higher rate and indicate uncertainty at a noticeably lower rate, and they also disagree at a slightly lower rate than the rest of the survey population.

Table 110 Answers to Question 16b by Being Aware of Keyword Help Screens a Keyword Searching Instruction Method

	Agree	Disagree	Don't Kn
Aware of Keyword Help Screens	128(65.3%)	21(10.7%)	47(24%)
Didn't Check Option	82(45.1%)	21(11.5%)	79(43.4

Percentages do not always equal 100% due to rounding.

The third statement under question 16 is about typing k to get keyword help screens and a place to enter a long keyword search, and one might presume that those who were aware of keyword help screens as a keyword searching instruction method might perform significantly better on this statement. In fact, they did, although over a third of them either disagreed, or did not know; the part about the screen allowing them to do a long keyword search may have been less known, and threw some of them off. (See Table 111.) It is certainly possible that some of those who say they were aware of keyword help screens still may not have known how to get them. The group in question did agree with the statement more, disagree with it slightly less, and tended less to say they did not know the answer.

Table 111 Answers to Question 16c by Being Aware of Keyword Help Screens a Keyword Searching Instruction Method

	Agree	Disagree	Don't Kn
Aware of Keyword Help Screens	127(64.1%)	15(7.6%)	56(28.3
Didn't Check Option	70(38.3%)	14(7.7%)	99(54.1

Percentages do not always equal 100% due to rounding.

Those who were aware of keyword help screens as a keyword searching instruction method also performed significantly better on the fourth statement under question 16, about the implied "and" done when a phrase is entered using keyword searching. (See Table 112.) They were not as knowledgeable about this statement as they have been about earlier ones, however; they did not agree with as high a margin of difference from the rest of the respondents, nor did they indicate uncertainty with as low a margin of difference. They disagreed at a somewhat higher rate than the rest of the respondents. Although this particular feature of keyword searching, the default operator, is installation-specific, information about it has been added to ISU's keyword help screens.

Table 112 Answers to Question 16d by Being Aware of Keyword Help Screens a Keyword Searching Instruction Method

	Agree	Disagree	Don't Kn
Aware of Keyword Help Screens	94(48.2%)	26(13.3%)	75(38.5
Didn't Check Option	64(35.2%)	18(9.9%)	100(54.9

Percentages do not always equal 100% due to rounding.

The fifth statement under question 16 is about Boolean operators and what they do in keyword searching on LUIS, and those who were aware of keyword help screens as a keyword searching instruction method performed significantly differently on this statement, also. (See Table 113.) They do perform generally better than the rest of the respondents on this statement, but they disagree at a slightly higher level again, and they do not perform as well as one might hope, since Boolean operator information is highlighted to such an extent on the help screens. It is realized, of course, that awareness of the screens does not mean that they have been completely, or even partially, read. This group does agree with the statement at a higher rate, and indicate uncertainty at a lower rate, than the rest of the respondents.

Table 113 Answers to Question 16e by Being Aware of Keyword Help Screens a Keyword Searching Instruction Method

	Agree	Disagree	Don't Kn
Aware of Keyword Help Screens	103(54.5%)	14(7.4%)	72(38.1
Didn't Check Option	66(36.7%)	11(6.1%)	103(57.2

Percentages do not always equal 100% due to rounding.

Those who were aware of keyword help screens as a keyword searching instruction method performed significantly differently than the rest of the respondents on the sixth statement under question 16, which is about keyword searching not accessing stopwords. Variation on this statement, however, was significant only to .05. (See Table 114.) The group in question agreed more with the statement than the rest of the respondents, although with not as high a margin of difference as on earlier statements, and they disagreed less. They also answered "don't know" less than the rest of the respondents although, again, with not as great a margin of difference as on earlier statements.

Table 114 Answers to Question 16f by Being Aware of Keyword Help Screens a Keyword Searching Instruction Method

	Agree	Disagree	Don't Kn
Aware of Keyword Help Screens	105(54.4%)	6(3.1%)	82(42.5
Didn't Check Option	73(41%)	11(6.2%)	94(52.8

Percentages do not always equal 100% due to rounding.

The seventh statement under question 16, about positional operators, also showed significant variation on the factor of being aware of keyword help screens as a keyword searching instruction method, but, again, only to the .05 level. (See Table 115.) Overall, everyone's performance on this statement was bad, but the group in question performed slightly less badly than the rest of the respondents. They agreed at a somewhat higher rate, and indicated uncertainty at a somewhat lower rate, than the rest of the respondents, but they disagreed at a somewhat higher rate, also.

Table 115 Answers to Question 16g by Being Aware of Keyword Help Screens a Keyword Searching Instruction Method

	Agree	Disagree	Don't Kn
Aware of Keyword Help Screens	60(31.4%)	12(6.3%)	119(62.3
Didn't Check Option	36(20.35)	8(4.5%)	133(75.1

Percentages do not always equal 100% due to rounding.

The eighth statement under question 16 is about field limiting, and those who were aware of keyword help screens as a keyword searching instruction method return to significant variation at the .01 level for this statement. (See Table 116.) The group in question agreed with the statement more often and said they did not know the answer less than the rest of the respondents, but they, again, disagreed more often than the rest of the survey population. Their performance on this question was not particularly good, but it was still generally better than the other respondents.

Table 116 Answers to Question 16h by Being Aware of Keyword Help Screens a Keyword Searching Instruction Method

	Agree	Disagree	Don't Kn
Aware of Keyword Help Screens	74(38.3%)	23(11.9%)	96(49.7
Didn't Check Option	42(23.7%)	17(9.6%)	118(66.7

Percentages do not always equal 100% due to rounding.

The ninth statement under question 16 is about truncation, and those who were aware of keyword help screens as a keyword searching instruction method performed significantly differently on this statement of keyword knowledge, also. (See Table 117.) The group in question performed a bit better on this statement about truncation than they did on the last one, about field limiting. Almost 50% of them agreed with the statement, as opposed to a little over a quarter of the other respondents, although the exact same number of respondents from the group in question did not know the answer. This is as opposed to 2/3 of the rest of the respondents, though. The two groups disagreed at exactly the same rate.

Table 117 Answers to Question 16i by Being Aware of Keyword Help Screens a Keyword Searching Instruction Method

	Agree	Disagree	Don't Kn
Aware of Keyword Help Screens	91(47.2%)	11(5.7%)	91(47.2
Didn't Check Option	48(27.4%)	10(5.7%)	117(66.9

Percentages do not always equal 100% due to rounding.

The final statement under question 16 is about using Library of Congress Subject Headings to do proper s= searching, and is, of course, not directly related to keyword searching. The group that was aware of keyword help screens as a keyword searching instruction method still performed significantly differently on this statement. (See Table 118.) They, again, tended to disagree slightly more often, but they agreed at a noticeably higher rate, and they also indicated uncertainty at a lower rate. This information is not in the keyword help screens, and there is no indication that this group was consistently exposed to another source of the information, but they may tend to read other help screens, too, to learn to use LUIS, and they may have gotten the information from them.

Table 118 Answers to Question 16j by Being Aware of Keyword Help Screens a Keyword Searching Instruction Method

	Agree	Disagree	Don't Kn
Aware of Keyword Help Screens	119(62.3%)	32(16.8%)	40(20.9
Didn't Check Option	81(47.1%)	26(15.1%)	65(37.8

Percentages do not always equal 100% due to rounding.

The next point on the survey where those who were aware of keyword help screens as a keyword searching instruction method show significant variation, albeit only to .05, is question 18, about frequency of using keyword searching on LUIS. (See Table

119.) The tendency is rather muddy, since the group in question was less likely than the rest of the respondents to say they used keyword searching every time they used LUIS, but, taking the two most frequent options together, they checked them slightly more often than the rest of the respondents. They also were noticeably less likely to say they almost never use keyword searching. No clear conclusion can be drawn from all this, though.

Table 119 Frequency of Using Keyword Searching by Being Aware of Keyw Help Screens as a Keyword Searching Instruction Method

	Aware of Key. Help Scrns.	Didn't Check Option
Almost Every Time I Use LUIS	67(38.3%)	54(44.6%)
More Than Half the Times I Use LUIS	39(22.3%)	16(13.2%)
Less Than Half the Times I Use LUIS	49(28%)	26(21.5%)
Almost Never	20(11.4%)	25(20.7%)

Percentages do not always equal 100% due to rounding.

The only other question that shows significant variation for those who were aware of keyword help screens as a keyword searching instruction method is question 21, about what methods were actually used to learn keyword searching. Two of the options on this question show variation for the group in question, one to the .05 level, and one to the .01 level, and for neither of the options is it very surprising to find variation for this group. The first option for learning keyword searching, the LUIS welcome screen, showed variation for this group at the .05 level--108 of 176, or 61.4%, chose it, versus 61 of 124, or 49.2%, of the rest of the respondents. This tends to confirm a supposition of most of this group being at-the-terminal learners about the availability of keyword searching and how to do it.

The second option under question 21 is "LUIS keyword help screens," and those who were aware of these as a keyword searching instruction method showed significant variation in checking this option. They tended to check it more often than the rest of the respondents--90 of 176, or 51.1%, versus 37 of 124, or 29.8%--but almost half of those who were aware of this method did not use it to learn keyword searching. The only other method they checked more than other respondents, though, was the welcome screen, so it is difficult to account completely for their better performance on question 16, the test of keyword knowledge. There is no way to tell from this survey how those who were aware of keyword help screens but did not use them to learn keyword searching acquired their knowledge.

The next option on question 14, about which keyword searching instruction methods the respondent was aware of, is "library workshops held once per semester." This option was only chosen by 41 people, so any correlations should be viewed even more carefully than usual. Earlier factors which have shown significant variation with this option include status, age range, learning of keyword searching availability from a library instruction class/workshop and from a library announcement, and being aware of library handouts/announcements as a keyword searching instruction method. Faculty, older age ranges, and the other groups listed all tended to be more aware of this option for keyword searching instruction.

Those who were aware of library workshops held once per semester as a keyword searching instruction method showed significant variation on being aware of the remaining keyword searching instruction methods not already correlated. They were more aware than the rest of the respondents of the other three options for instruction listed. Twenty-seven of 41, or 65.9%, of the group in question were aware of library instruction classes at instructor request as a keyword searching instruction method, versus 87 of 357, or 24.4%, of the rest of the respondents.

Fourteen of 41, or 34.1%, of those who were aware of library workshops held once per semester as a keyword searching instruction method were also aware of on-demand instruction appointments with librarians, versus 18 of 357, or 5%, of the rest of the survey population. The group in question was aware of information desk assistance at a rate of 22 of 41, or 53.7%, as opposed to 113 of 357, or 31.7%, of the rest of the respondents. All of this would probably indicate exposure to library instruction and/or library handouts/announcements, as the significant correlations discussed earlier in the survey would support. There is no further evidence, however, of exposure to library instruction later in the survey.

The only other point in the survey where being aware of library workshops held once per semester as a keyword searching instruction method is on one option under question 21, about instruction methods actually used to learn keyword searching. The option is learning from library handouts, and the significance level when correlated with the factor in question is only .05. Ten of 29, or 34.5%, of those who were aware of library workshops as a keyword searching instruction method used library handouts to learn keyword searching, as opposed to 50 of 271, or 18.5%, of the rest of the respondents. None of the correlations with the factor in question is very conclusive.

The next option under question 14, about awareness of different instruction methods for keyword searching, is "library instruction classes at instructor request." The number of respondents that checked this was 114, and there have been several significant variations based on this factor discussed earlier in the survey rundown. Status, subject area, learning of keyword searching availability from a library instruction class, library announcement, and the Welcome to LUIS screen, not being aware of the availability of keyword searching at all, and being aware of library handouts/announcements and library workshops held once per semester as keyword searching instruction methods, have all previously coordinated significantly with this factor.

ISU faculty and underclassmen were more likely to be aware of this method of keyword searching instruction, as were respondents in HPER, nursing, and education. Learning of keyword searching availability from a library instruction class and library announcements is related to being more likely to be aware of library instruction classes at instructor request as a keyword searching instruction method. Learning of keyword searching availability from the Welcome to LUIS screen and not being aware of keyword searching availability at all is related to being less likely to be aware of library instruction classes for keyword searching instruction. Being aware of library handouts/announcments and library workshops held once per semester as keyword searching instruction methods is related to being more aware of library instruction classes held at instructor request as another keyword searching instruction method.

Those who were aware of library instruction classes at instructor request as a keyword searching instruction method were also more aware of the two remaining options under question 14 for keyword searching instruction. Twenty-one of 114, or 18.4%, of the group in question were aware of on-demand instruction appointments with librarians, versus 11 of 284, or 3.9%, of the rest of the respondents. Fifty-eight of 114, or 50.9%, of those who were aware of library instruction classes as a keyword searching instruction method were also aware of information desk assistance as an instruction source, as opposed to 77 of 284, or 27.1%, of the rest of the survey population. These instruction methods and ones mentioned in the the last paragraph were probably all learned of in a library instruction class for many respondents.

Those who were aware of library instruction classes at instructor request as a keyword searching instruction method showed some significant variation on five of ten statements of keyword knowledge on question 16. Three of the statements show variation to the .05 level, and two of them to the .01 level. The performance of this group on question 16 is not as good as that of those who learned of keyword searching availability from a library instruction class, reflecting the probability that not as many of the group being studied currently actually attended a library instruction class on keyword searching.

The first statement under question 16 is about using keyword searching to access a single word anywhere in LUIS, and those who were aware of library instruction classes held at instructor request as a keyword searching instruction method performed significantly differently on this statement than the rest of the respondents, to the level of .05. (See Table 120.) The group in question generally performed better than the rest of the respondents on this statement, agreeing at a somewhat higher rate, and indicating uncertainty at a lower rate. Continuing a trend discussed earlier, though, this group disagreed with the statement at a slightly higher rate--perhaps yet another group of respondents that has a wrong concept about keyword searching more firmly fixed in their heads than a group that has not had instruction.

Table 120 Answers to Question 16a by Being Aware of Library Instruct Classes at Instructor Request as a Keyword Searching Instruction Method

	Agree	Disagree	Don't Kn
Aware of Lib. Instruction Classes	86(76.8%)	11(9.8%)	15(13.4
Didn't Check Option	177(65.8%)	23(8.6%)	69(25.7

Percentages do not always equal 100% due to rounding.

The second statement under question 16 is about keyword searching allowing access to a phrase anywhere in LUIS, and those who were aware of library instruction classes as a keyword searching instruction method also performed significantly differently on this statement, again to the .05 level only. (See Table 121.) They definitely performed better than the rest of the respondents on this item, though, agreeing with the statement 15% more than the others, disagreeing at a slightly lower rate, and indicating uncertainty 10% less than the others.

Table 121 Answers to Question 16b by Being Aware of Library Instruct Classes at Instructor Request as a Keyword Searching Instruction Method

	Agree	Disagree	Don't Kn
Aware of Lib. Instruction Classes	74(66.1%)	10(8.9%)	28(25%)
Didn't Check Option	136(51.1%)	32(12%)	98(36.8

Percentages do not always equal 100% due to rounding.

Those who were aware of library instruction classes at instructor request as a keyword searching instruction method also showed variation significant to .05 on the fourth statement under question 16--the statement about the implied "and" when an operator-less phrase is searched in keyword searching. (See Table 122.) They generally performed better than the rest of the respondents, agreeing about 15% more and saying they did not know about 15% less, although they did disagree at a slightly higher rate.

Table 122 Answers to Question 16d by Being Aware of Library Instruct
Classes at Instructor Request as a Keyword Searching Instruction Method

	Agree	Disagree	Don't Kn
Aware of Lib. Instruction Classes	58(52.7%)	13(11.8%)	39(35.5
Didn't Check Option	100(37.5%)	31(11.6%)	136(50.9

Percentages do not always equal 100% due to rounding.

For the fifth statement under question 16, about Boolean operators and what they do, those who were aware of library instruction classes at instructor request varied even more decidedly than on the three earlier statements, to the .01 level. (See Table 123.) They definitely performed better than the rest of the respondents, agreeing almost 20% more, disagreeing less, and indicating uncertainty over 15% less. This group has absorbed the difficult concept of Boolean searching to a fairly high degree.

Table 123 Answers to Question 16e by Being Aware of Library Instruct
Classes at Instructor Request as a Keyword Searching Instruction Method

	Agree	Disagree	Don't Kn
Aware of Lib. Instruction Classes	65(59.6%)	5(4.6%)	39(35.8
Didn't Check Option	104(40%)	20(7.7%)	136(52.3

Percentages do not always equal 100% due to rounding.

The final statement under question 16 on which those who were aware of library instruction classes at instructor request as a keyword searching instruction method showed significant variation was the ninth item, about truncation. (See Table 124.)

The group in question generally performed better, agreeing at a higher rate and indicating uncertainty at a lower rate, but they disagreed at a notably higher rate than the rest of the respondents on this item. Over half of them seemed to have absorbed the information about truncation, though, versus less than a third of the other respondents.

Table 124 Answers to Question 16i by Being Aware of Library Instruct Classes at Instructor Request as a Method of Keyword Searching Instructi

	Agree	Disagree	Don't Kn
Aware of Lib. Instruction Classes	55(50.9%)	9(8.3%)	44(40.7
Didn't Check Option	84(32.3%)	12(4.6%)	164(63.1

Percentages do not always equal 100% due to rounding.

The next point in the survey at which those who were aware of library instruction classes at instructor request as a keyword searching instruction method showed significant variation, albeit only to the .05 level, is question 18, about how often keyword searching is used on LUIS. (See Table 125.) The trend for this item is not clear, but the group in question was notably less likely to check that they do keyword searching almost every time they search LUIS, and more likely to say they do it over half the times they use LUIS. They were slightly less likely to say they almost never use it. If one groups the two most frequent use categories together, though, the percentages for the group in question and the other respondents is about the same. It is difficult to even speculate on the reason for these results.

Table 125 Frequency of Using Keyword Searching by Being Aware of Libr Instruction Classes at Instructor Request as a Keyword Searching Instr tion Method

	Aware of Lib. Inst. Classes	Didn't Check Option
Almost Every Time I Use LUIS	31(32.6%)	90(44.8%)
More Than Half the Times I Use LUIS	26(27.4%)	29(14.4%)
Less Than Half the Times I Use LUIS	26(27.4%)	49(24.4%)
Almost Never	12(12.6%)	33(16.4%)

Percentages do not always equal 100% due to rounding.

Those who were aware of library instruction classes at instructor request as a keyword searching instruction method showed significant variation on four options under question 21, about what methods of instruction were actually used to learn keyword searching. Three show variation to .01 and one option only to .05. The first option under the question is learning from the LUIS welcome screen, and the group in question varied significantly, to the .01 level, on this item. They were notably less likely to check this method than the rest of the respondents--42 of 97, or 43.3%, versus 127 of 203, or 62.6%, of the rest of the respondents.

Those who were aware of library instruction classes at instructor request as a keyword searching instruction method showed significant variation, only to the .05 level, on the third item on question 21, trial and error as a learning method. They were more likely to check this option than the rest of the respondents--62 of 97, or 63.9%, versus 104 of 203, or 51.2%, for the other respondents. This result is a bit surprising, since earlier correlations seemed to indicate use of more organized learning methods. Use of other methods does not preclude use of trial and error, though.

The fourth item under question 21, "library instruction class/workshop," also shows significant variation for those who were aware of library instruction classes at instructor request as a keyword searching instruction method, not very surprisingly. Sixty-five of 97, or 67%, of the group in question checked this option, versus 43 of 203, or 21.2%, of the rest of the respondents. This fits with earlier results that seemed to indicate that a large portion of the group must have attended library instruction classes.

The final instruction option under question 21 which shows significant variation on the factor of being aware of library instruction classes at instructor request as a keyword searching instruction method is library handouts, the ninth item. This is also the last item on the questionnaire which shows such variation. Thirty of 97, or 30.9%, of the group in question checked this item, versus 30 of 203, or 14.8%, of the rest of the respondents. This result is not surprising, since those who attended library instruction classes covering keyword searching should all have received handouts about it, and some of them actually used them.

The next option under question 14, about which keyword searching instruction methods the respondent is aware of, is "on-demand instruction appointments with librarians," and only 32 people were aware of these, so any correlations will be very tentative. Earlier correlations of significance with this factor include those with status, age range, use of CD-ROM databases, finding out about the availability of keyword searching from a library announcement, and being aware of library handouts/announcements, keyword help screens, library workshops held once per semester, and library instruction classes at instructor request as keyword searching instruction methods.

Faculty, those in older age ranges, those who used CD-ROM databases, those who found out about keyword searching availability in the ways listed in the last paragraph, and those who were aware of any of the earlier listed keyword searching instruction methods were more likely to be aware of on-demand appointments with librarians as a keyword searching instruction method. This factor only coordinates with two further items on the survey. The first one, as one might expect from earlier results, is the remaining keyword searching instruction method on question 14, information desk assistance. Those who were aware of on-demand appointments with librarians as a keyword searching instruction method tended to be also aware of information desk assistance. Twenty-five of 32, or 78.1%, of them were aware of this form of instruction also, as opposed to 110 of 366, or 30.1%, of the rest of the respondents. It may be that these methods were learned of through library instruction, although there is no specific evidence to support this.

Only one method of instruction actually used showed significant variation for the group in question. Those who were aware of on-demand appointments with librarians as a keyword searching instruction method showed significant variation to the .05 level with one option under question 21, about what methods were actually used to learn keyword searching. The second option, keyword help screens, was chosen by 14 of 22, or 63.6%, of the group in question, versus 113 of 278, or 40.6%, of the rest of the survey population. There is little one can conclude from this, since numbers are so small, and there is nothing about using keyword help screens that would tell users about on-demand appointments with librarians.

The sixth option under question 14, about awareness of methods of library instruction for keyword instruction, is information desk assistance, and 135 respondents checked this option. So far in this paper, this factor has related significantly to gender, learning of keyword searching availability from a library instruction class/workshop, and being aware of any of the other keyword searching instruction methods listed earlier in question 14. Females were more aware of this method, as were those who learned of keyword searching availability from a library instruction class/workshop, and those who knew of any of the other keyword searching instruction methods.

Being aware of information desk assistance as a keyword searching instruction methods is connected to significant variation in answers to question 16e, a statement of keyword knowledge about stopwords. Generally those who were aware of this instruction method performed better than the rest of the respondents on question 16f, agreeing more--75 of 131, or 57.3%, versus 103 of 240, or 42.9%--and indicating uncertainty less--48, or 36.6%, versus 128, or 53.3%. They disagreed more, though, at a rate of 8, or 6.1%, versus 9, or 3.8%. This is another instance of a group that might feel itself more informed about keyword searching risking disagreement more than a group that is not as informed.

The next place in the survey where being aware of information desk assistance as a keyword searching instruction method makes a significant difference in answers, to the .05 level, is in reasons for not having done a keyword search, on question 17. The numbers being dealt with on this item are fairly small, so the results are only indicative. (See Table 126.) Those in the group in question were noticeably more likely than the rest of the respondents to check that keyword searching is too difficult to learn, and that they haven't been able to go to a library instruction session on it, as reasons for not doing keyword searching. They were less likely than the rest of the respondents to check that they would not search often, so they wouldn't remember how to do it, and that they were not aware of this form of searching at all.

Table 126 Reasons for Never Having Done a Keyword Search by Being Aware Information Desk Assistance as a Keyword Searching Instruction Method

	Aware of Info. Desk	Didn't Check Option
It is too difficult to learn.	6(16.2%)	1(1.2%)
It takes too long to learn.	2(5.4%)	1(1.2%)
I don't need to; other forms of searching are adequate for me.	11(29.7%)	23(28%)
I don't search very often, so I wouldn't remember how to do it.	2(5.4%)	10(12.2%)
I haven't been able to go to a library instruction session on it.	6(16.2%)	6(7.3%)
There hasn't been staff available to assist me.	1(2.7%)	3(3.7%)
I wasn't aware of this form of searching at all.	9(24.3%)	35(42.7%)
Its response time is too slow.	0	3(3.7%)

Percentages do not always equal 100% due to rounding.

Those who were aware of informaton desk assistance as a keyword searching instruction method showed significant variation on four options under question 21, about what methods of instruction were actually used to learn keyword searching. Two of the options show variation at the .05 level and two at the .01 level. The first option that shows variation for the group in question is the third one, trial and error, and variation is significant to the .05 level. Sixty-eight of 108, or 63%, of those who were aware of information desk assistance as a keyword searching instruction method used trial and error to learn keyword searching, versus 98 of 192, or 51%, of the other respondents.

The fourth option, "library instruction class/workshop," for learning keyword searching shows variation significant to .01 for those who were aware of information desk assistance as a keyword searching instruction method. Fifty of 108, or 46.3%, of the group in question used a library instruction class/workshop to learn keyword searching, versus 58 of 192, or 30.2%, of the rest of the respondents. Still, evidently more than half of them did not have library instruction on keyword searching.

The fifth option for keyword searching instruction method used is information desk librarian assistance, and, understandably, those who were aware of information desk assistance as a keyword searching instruction method showed significant variation on this item. Surprisingly, though, only 22 of 108, or 20.4%, of those who were aware of this method actually used it as an instruction method for keyword searching. This is still more, however, than the 12 of 192, or 6.3%, of the rest of the respondents that used it (and probably should have checked that option on question 14 anyway.)

The final element which shows significant variation, to the .05 level, on the factor of being aware of information desk assistance as a keyword searching instruction method is the seventh option under question 21, "friend or someone at next terminal." The group in question had a slightly higher tendency to check this option than the rest of the respondents--25 of 108, or 23.1%, versus 27 of 192, or 14.1%, of the others. This method of instruction, along with trial and error and information desk librarian assistance shows this group to have had a strong at-the-terminal learning propensity, although, of course, almost half of them had library instruction.

The final option on question 14, about methods of instruction for keyword searching, is not to have been aware of any of the methods listed. Earlier in this paper, this factor has shown significant variation with frequency of LUIS experience, learning about keyword searching availability from a library instruction class/workshop and from a library announcement, and not being aware that keyword searching was available, for the 73 respondents who were aware of none of the listed keyword searching instruction methods.

There was a tendency for those who search LUIS less frequency to be less aware of any methods of keyword searching instruction. Those who learned of keyword searching availability from a library instruction class/workshop or from a library announcement were less likely to be unaware of any methods of keyword searching instruction. Those who were unaware of the availability of keyword searching at all also tended to be unaware of any keyword searching library instruction methods.

Not being aware of any library instruction methods for keyword searching related significantly to nine of ten statements of keyword knowledge on question 16. The first statement of keyword knowledge is about using keyword searching to search for a single word anywhere in LUIS. (See Table 127.) Those who were unaware of any of the listed methods of keyword searching instruction generally performed worse than the rest of the respondents on this question. They agreed at a much lower level and indicated uncertainty at a much higher level than the rest of the respondents, but they disagreed at a slightly lower rate. This is the reverse of the tendency noted earlier; these respondents probably felt ill informed about keyword searching and were less willing to commit themselves to disagreeing.

Table 127 Answers to Question 16a by Being Unaware of Any Listed Keyw Searching Instruction Methods

	Agree	Disagree	Don't Kn
Unaware of Keyword Instr. Meth.	32(45.7%)	5(7.1%)	33(47.1
Didn't Check Option	231(74.3%)	29(9.3%)	51(16.4

Percentages do not always equal 100% due to rounding.

The second statement of keyword knowledge is about using keyword searching to locate a phrase anywhere in LUIS, and those who were unaware of any of the listed keyword searching instruction methods performed significantly differently than the rest of the respondents. (See Table 128.) On this statement, the "unaware" group definitely performed worse than the rest of the respondents. A lower percentage agreed with the statement, a higher percentage disagreed, and a higher percentage indicated uncertainty.

Table 128 Answers to Question 16b by Being Unaware of Any Listed Keyw Searching Instruction Methods

	Agree	Disagree	Don't Kn
Unaware of Keyword Instr. Meth.	22(31.4%)	9(12.9%)	39(55.7
Didn't Check Option	188(61%)	33(10.7%)	87(28.2

Percentages do not always equal 100% due to rounding.

The third statement under question 16 is about typing in k to get keyword help screens and a long keyword search entry screen, and those who were unaware of any of the listed keyword searching instruction methods showed significant variation on this statement, also. The group in question generally performed worse on this statement, but reverted to the pattern on the first statement. That is, they agreed less and indicated more uncertainty, but they disagreed less than the rest of the respondents. (See Table 129.)

Table 129 Answers to Question 16c by Being Unaware of Any Listed Keyw
Searching Instruction Methods

	Agree	Disagree	Don't Kn
Unaware of Keyword Instr. Meth.	22(31.4%)	4(5.7%)	44(62.9
Didn't Check Option	175(56.3%)	25(8%)	111(35.7

Percentages do not always equal 100% due to rounding.

The fourth statement under question 16 also shows significant variation for those who were unaware of any listed instruction methods for keyword searching; it is about the implied "and" done when a phrase is entered in keyword searching with no operator. (See Table 130.) Again, the group in question performs generally worse than the rest of the respondents, agreeing less and saying they didn't know more, but they did disagree less than the others.

Table 130 Answers to Question 16d by Being Unaware of Any Listed Keyw
Searching Instruction Methods

	Agree	Disagree	Don't Kn
Unaware of Keyword Instr. Meth.	16(23.2%)	7(10.1%)	46(66.7
Didn't Check Option	142(46.1%)	37(12%)	129(41.9

Percentages do not always equal 100% due to rounding.

The fifth statement under question 16 is about Boolean operators and what they do, and those who were unaware of any listed methods of keyword searching instruction also performed significantly differently on this item. (See Table 131.) By any measure the group in question performed worse on this statement than the rest of the respondents. They agreed noticeably less, disagreed more, and indicated uncertainty to a higher degree than the rest of the survey population.

Table 131 Answers to Question 16e by Being Unaware of Any Listed Keyw
Searching Instruction Method

	Agree	Disagree	Don't Kn

Unaware of Keyword Instr. Meth.	16(23.2%)	6(8.7%)	47(68.1
Didn't Check Option	153(51%)	19(6.3%)	128(42.7

Percentages do not always equal 100% due to rounding.

Stopwords in LUIS keyword searching are the focus of the sixth statement under question 16, and those who were unaware of any listed methods of keyword searching instruction showed significant variation on this statement. (See Table 132.) The group in question again definitely performed worse on this statement than the rest of the respondents. They agreed at a lower rate, disagreed at a higher rate, and indicated uncertainty at a higher rate.

Table 132 Answers to Question 16f by Being Unaware of Any Listed Keyw Searching Instruction Methods

	Agree	Disagree	Don't Kn
Unaware of Keyword Instr. Meth.	18(27.7%)	4(6.2%)	43(66.2
Didn't Check Option	160(52.3%)	13(4.2%)	133(43.5

Percentages do not always equal 100% due to rounding.

Positional operators in keyword searching on LUIS are the topic of the seventh statement under question 16, and, again, those who were unaware of any listed keyword searching instruction method answered this question significantly differently than the other survey respondents. (See Table 133.) Almost 85% of the group in question said they did not know if this statement was true, versus almost 65% of the rest of the respondents. The "unaware" group also agreed with the statement less than the other respondents, but they disagreed with it less, too.

Table 133 Answers to Question 16g by Being Unaware of Any Listed Keyw Searching Instruction Method

	Agree	Disagree	Don't Kn
Unaware of Keyword Instr. Meth.	8(12.1%)	2(3%)	56(84.8
Didn't Check Option	88(29.1%)	18(6%)	196(64.9

Percentages do not always equal 100% due to rounding.

The only statement under question 16 on which those who were unaware of any listed keyword searching instruction methods did not show any significant variation was the eighth one, about field limiting. They did show significant variation on the ninth statement, about truncation. (See Table 134.) Although the group in question disagreed slightly less than the rest of the respondents, otherwise they performed worse, agreeing much less and indicating uncertainty more.

Table 134 Answers to Question 16i by Being Unaware of Any Listed Keyw Searching Instruction Methods

	Agree	Disagree	Don't Kn
Unaware of Keyword Instr. Meth.	12(18.2%)	2(3%)	52(78.8
Didn't Check Option	127(42.1%)	19(6.3%)	156(51.7

Percentages do not always equal 100% due to rounding.

The final statement under question 16 is not directly about keyword searching, but says that a Library of Congress subject heading is needed to do correct s= searching. Those who were unaware of any keyword searching instruction methods listed also performed significantly differently on this question. (See Table 135.) They did not perform as poorly as they have done earlier on question 16, but they still performed worse than the rest of the respondents, agreeing less and indicating uncertainty more. They did disagree less than the rest of the respondents, though.

Table 135 Answers to Question 16j by Being Unaware of Any Listed Keyw Searching Instruction Method

	Agree	Disagree	Don't Kn
Unaware of Keyword Instr. Meth.	26(40.6%)	8(12.5%)	30(46.9
Didn't Check Option	174(58.2%)	50(16.7%)	75(25.1

Percentages do not always equal 100% due to rounding.

The next question on which being unaware of any listed keyword searching instruction method made a significant difference in response was question 17, about reasons for not having performed a keyword search before. (See Table 136.) The numbers are very small for this question, as usual, so the results should be taken with an even larger grain of salt than usual. It is not surprising, though, that the large majority of those from this group who had not done keyword searching before said that their reason was that they were not aware of its existence. This seems logical, since they were completely unaware of related instruction methods. The response that they don't need to learn keyword searching was chosen by far fewer of the group in question than of the other respondents. Some of them, but, again, less than the rest of the respondents, said that they would not search it often enough to remember it.

Table _136_ Reasons for Never Having Done a Keyword Search by Being Unaw of Any Listed Keyword Searching Instruction Methods

	Unaware of Key. Instr. Meth.	Didn't Check Option
It is too difficult to learn.	0	7(8.2%)
It takes too long to learn.	0	3(3.5%)
I don't need to; other forms of searching are adequate for me.	6(17.6%)	28(32.9%)
I don't search very often, so I wouldn't remember how to do it.	1(2.9%)	11(12.9%)
I haven't been able to go to a library instruction session on it.	3(8.8%)	9(10.6%)
There hasn't been staff available to assist me.	0	4(4.7%)
I wasn't aware of this form of searching at all.	24(70.6%)	20(23.5%)
Its response time is too slow.	0	3(3.5%)

Percentages do not always equal 100% due to rounding.

The group that was unaware of any listed keyword searching instruction methods showed significant variation on three options under question 21, about what methods were actually used to learn keyword searching. This is obviously a contradiction, since they presumably shouldn't have checked anything on this question, but the numbers that checked the options that showed significant variation were very low. On the other five options on this question, the group being studied replied in the same patterns as the rest of the respondents--obviously, since there was no significant variation--so their response levels were fairly high, considering they were not supposed to be aware of any of these options. Two of the options vary to the .01 level, and one to the .05 level.

The first option that shows variation is "LUIS keyword help screens." The group in question checked this much less than the rest of the respondents--8 of 40, or 20%, versus 119 of 260, or 45.8%, of the others.

The next option which showed significant variation for those who were allegedly unaware of any listed library instruction methods for keyword searching was the fourth one, "library instruction class/workshop." The group in question responded to this option at a low level. Four of 40, or 10%, of the group in question checked this option, versus 104 of 260, or 40%, of the rest of the respondents.

The ninth option on question 21, library handouts, showed variation significant to .05 for those who were unaware of any listed library instruction methods for keyword searching. Again, they checked this option at a lower rate than the rest of the respondents--3 of 40, or 7.5%, of the group in question, versus 57 of 260, or 21.9%, of the rest of the survey population.

The final item on which those who were unaware of any listed keyword searching instruction methods showed significant variation, to the .05 level, was question 26, about comparison of k= searching to a=, t=, and s= searching. (See Table 137.) The group in question was somewhat less likely to choose the second statement, saying that k= searching was better for subject searching, but they still use a= and t= searching, when appropriate. They were somewhat more likely to say that keyword searching was only a last resort for them. If they were not as well instructed about it, this attitude was understandable, although there was almost no variation between the two groups on choosing the first statement, that keyword searching was superior to the other methods of searching, and they use it most of the time.

Table 137 Comparison of Keyword Searching to a=,t=,s= by Being Unaware Any Listed Keyword Searching Instruction Methods

	K= Superior	K= Best for Subject	K= Last Res
Unaware of Key. Ins. Meth.	7(19.4%)	18(50%)	11(30.6%)
Didn't Check Option	40(20%)	135(67.5%)	25(12.5%)

Percentages do not always equal 100% due to rounding.

That was the final option on question 14, about which methods of keyword searching library instruction the respondents were aware of. Notable trends for several options on this question include the tendency to know about most or all of the rest of the instruction methods, if you knew about one of them. This was less true for those who checked keyword help screens, though. Another trend was better performance on question 16, the test of keyword knowledge, for several groups--those that were aware of library handouts, keyword help screens, and library instruction classes. Those that were unaware of any of the listed instruction methods performed worse than the rest of the respondents. The results on this question generally continued a related trend--those groups that might consider themselves better informed about keyword searching, and that often agreed with statements more and indicated uncertainty less, generally disagreed at a higher rate than the rest of the respondents. They seemed more certain of their (incorrect) knowledge and more willing to risk disagreeing.

Respondents to question 14 also showed variation for several options on reasons for not having performed a keyword search. Those who were aware of library handouts and information desk assistance, and those who were unaware of any library instruction methods for keyword searching, showed significant variation on question 17, but no clear trend appeared. There were also a number of understandable significant variations for options under question 21, about which methods of library instruction were actually used to learn keyword searching. Those who were aware of library handouts used trial and error, library instruction, and library handouts. Those who were aware of keyword help screens used the Welcome to LUIS screen and keyword help screens. Those who were aware of library instruction classes at instructor request used the Welcome to LUIS screen, trial and error, library instruction classes, and library handouts. Those who were aware of information desk assistance used trial and error, library instruction classes, information desk librarian assistance, and a friend or someone at the next terminal. A notable fact was that comparatively few respondents that were aware of a given instruction method actually used it to learn keyword searching.

Desired Additional Methods of Keyword Searching Instruction. The next question on the survey to be discussed is question 15, about what additional instruction methods for keyword searching the respondent would use if they were available. Eight options were listed, with an item for "other," asking the respondent to specify, but no usable, meaningful answers were obtained for "other." The options and response levels are given in Table 138. The most popular options were computer-based--a microcomputer interface, a computerized tutorial, and more descriptive error messages.

Table 138 Desired Additional Methods of Keyword Searching Instruction

Computerized Tutorial	130(32.5%)
Microcomputer Interface that Makes Keyword Searching Easier	135(33.8%)
More Descriptive Error Messages	116(29%)
More Printed Handouts	81(20.3%)
More Library Instruction Classes	28(7%)
More Library Staff Assistance	61(15.3%)
A Video Program	36(9%)
Peer Tutoring	39(9.8%)
Other	19(4.8%)

Percentages do not always equal 100% due to rounding.

Care was taken to phrase this question so that respondents were asked which methods they would actually want to use, not which ones they thought would be nice to have around. It is interesting to note that the options which got the best response were ones that would presumably available right at the terminal--one would not have to go anywhere separate from the terminal or schedule an appointment or depend on someone else for these methods. The fourth most popular method, more printed handouts, also has these characteristics. Library instruction classes, staff assistance, a video program and peer tutoring got comparatively little support.

There were comparatively few factors in the survey that seemed meaningful to correlate with the responses to question 15. Some have been done earlier in the survey and will be alluded to, if significant variation was found, in the discussion of each option. The only factors farther on in the survey with which the options were tested were question 17, about reasons for never having done a keyword search, and question 27, about attributions for failure of keyword searches.

The first option was the second most popular, with 130 responses, "computerized tutorial." This option showed no significant variation with any factor it was tested with. The second option was the most popular one, with 135 responses--a microcomputer interface to make keyword searching easier. Earlier in the survey, this option has shown significant variation with subject area and with previous experience with CD-ROM databases. Those respondents in business, social science and technology were notably more interested in this option than the rest of the respondents. Those who had used CD-ROM databases before were somewhat more interested in this option than the rest of the respondents. There were no further significant correlations for this option.

The third option is "more descriptive error messages," and 116 people checked this option, making it the third most popular. This factor has shown significant variation earlier in the paper based on frequency of searching LUIS, with those who search no more than a few times a month and those who search no more than a few times a year choosing this option more often.

Those who chose more descriptive error messages and presumably have not done a keyword search showed significant variation on reasons for never having done a keyword search; of course, the response numbers are very small--20 respondents. (See Table 139.) The group in question was more likely than the rest of the respondents to choose the first reason under question 17, "It is too difficult to learn." They were less likely to choose the fourth and fifth options, that they don't search often enough to remember how to do keyword searching, and that they haven't been able to attend a library instruction session on it.

Table 139 Reasons for Never Having Done a Keyword Search by Choosing M
Descriptive Error Messages as a Desired Additional Keyword Searching
struction Method

	Want More Des. Error Msgs.	Didn't Check Option
It is too difficult to learn.	5(25%)	2(2%)
It takes too long to learn.	1(5%)	2(2%)
I don't need to; other forms of searching are adequate for me.	5(25%)	29(29.3%)
I don't search very often, so I wouldn't remember how to do it.	1(5%)	11(11.1%)
I haven't been able to go to a library instruction session on it.	0	11(11.1%)
There hasn't been staff available to assist me.	1(5%)	4(4%)
I wasn't aware of this form of searching at all.	7(35%)	37(37.4%)
Its response time is too slow.	0	3(3%)

Percentages do not always equal 100% due to rounding.

The fourth option was more printed handouts, and it was the fourth most popular, chosen by 81 respondents. Previously in the paper, choice of this method has shown significant variation with age range; those who are 31-40 and 41 or older were most interested in this option. Those who are 23-30 were fairly uninterested in it. This option showed no further significant variation.

The fifth option, more library instruction classes, was the least popular item, chosen by only 28 people. It has shown significant variation on several earlier factors, status, frequency of searching LUIS, and length of experience with searching LUIS. Upperclassmen and faculty at ISU were the least likely to check this option. Those who had never used LUIS or used it only a few times were more likely to check it. Those who used LUIS for 0-1 years were also more likely to check it.

Those who chose the option of more library instruction classes showed variation significant to the .05 level on question 27, which deals with attribution for failure on keyword searches. Only 18 respondents are involved, however. (See Table 140.) This group was most likely to say that their topic was too specific, whereas the other respondents were most likely to say that they were not finding the right words for their topic. The group in question was also more likely than the rest of the respondents to say that they didn't know enough about how to do a keyword search.

Table 140 Reasons for Unsuccessful Keyword Search by Choosing More Libr Instruction Classes as a Desired Additional Keyword Searching Instruct Method

	Topic too Specific	Not Right Words	Don't Know about Keyword	No Ma on LU
More Lib. Instr. Classes	7(38.9%)	5(27.8%)	5(27.8%)	1(5.
Didn't Check Option	52(21.1%)	142(57.7%)	31(12.6%)	21(8.

Percentages do not always equal 100% due to rounding.

The sixth option under question 15 is more library staff assistance, and this was the fifth most popular option, with 61 people checking it. It showed absolutely no significant variation with any factor tested. The seventh option, a video program, was the seventh most popular option, with 36 people choosing it. It has shown significant variation with an item on question 8, about previous computer experience--not having previously used another computer system at all. Those who had used no other computer system were more likely to check this option than the rest of the respondents. This option showed no further variation with any item tested.

The last option under question 15 is peer tutoring, the sixth most popular item, and 39 people chose it. Choice of this option has been related earlier to status and subject area. Underclassmen at ISU were most interested in this option, with ISU faculty least interested. Those in social science, nursing, humanities, and HPER were more interested in this option. This option showed no further significant variation.

To summarize for question 15, options for instruction that could be used more independently and at the terminal were more popular--especially computerized ones. These options showed very little significant variation that has not been discussed earlier related to other factors. Those who chose more descriptive error messages showed variation on reasons for never having done a keyword search. Those who picked more library instruction classes were most likely to attribute a failed keyword search to having a too-specific topic, and were somewhat more likely than the others to attribute it to not knowing enough about how to do a keyword search.

Test of Keyword Knowledge. Question 16 is a test of keyword knowledge, with nine statements about keyword searching and a related one about s= searching. For each statement, the respondent may agree, disagree, or say they don't know. The correct answer for each statement was to agree, but very few respondents seem to have figured this out, so the results are probably a fairly accurate picture of their knowledge. Few people seemed to hesitate to check that they didn't know the answer. Each statement will be dealt with individually, as far as results and correlations are concerned.

The first statement, 16a, states that keyword searching allows access to a single word anywhere in LUIS. This statement received the most agreement, and is probably the most basic fact about keyword searching. (See Table 141.) Quite a few previous factors have shown significant variation with this item. Status, age range, frequency of searching LUIS, experience with online dial-up databases, experience with a computer at school for a non-computer course, experience with a computer at school for a computer course, previous performance of keyword searching, learning of the availability of keyword searching from a library instruction class/workshop, from a friend, professor, or someone at the next terminal, or not being aware that it was available, and being aware of library handouts/announcements, keyword help screens, library instruction classes held at instructor request, or being unaware of any keyword searching instruction methods, all showed significant differences when correlated with the results of question 16a.

Table 141 Answers to Question 16a
Keyword searching makes it possible to search for a single word anywhere LUIS for library materials.

Agree	263(65.8%)
Disagree	34(8.5%)
Don't Know	84(21%)
Unusable Answer	1(.3%)
Blank	18(4.5%)

Percentages do not always equal 100% due to rounding.

Performance on 16a worsens as one goes from ISU underclassmen to faculty, as it does when one moves from younger age ranges to older, and when one moves from more frequent LUIS users to less frequent LUIS users. Those with experience with online dial-up databases, a computer at school for a non-computer course and one for a computer course, and those who had previously done keyword searching all performed better on this statement. Those who learned of the availability of keyword searching from a library instruction class/workshop or from a friend, professor, or someone at the next terminal, and those who were aware of library handouts/announcements, keyword help screens, and library instruction classes at instructor request as keyword searching instruction methods, all agreed with the statement at a higher rate than did the rest of the respondents. Those who were unaware of keyword searching or unaware of any of the listed keyword searching instruction methods agreed at a lower rate.

Question 16a showed significant variation, to the .05 level, when tested with question 18, about how often the respondent uses keyword searching on LUIS. (See Table 142.) It should be noted that some of the response numbers are small. Interestingly enough, there was comparatively little difference between the keyword searching frequencies of those who agreed with the statement and those who disagreed. Those who agreed were somewhat more likely to say they use keyword searching almost every time they use LUIS. The larger differences came for those who indicated uncertainty on this statement. They had about the same percentage at the highest frequency as those who disagreed, but they had considerably fewer at the second highest frequency. Over 60% of them fell in the two lowest frequency responses, versus over 40% of the disagree-ers and over 36% of the agree-ers. Over 38% of the "don't know"s almost never used keyword searching. The results for this statement on this factor support a concept earlier alluded to several times: some users who feel informed about keyword searching because they have received instruction in it, and/or done it a lot, get incorrect "facts" in their heads and are more sure that they are true. Those who feel less informed and/or have less experience with keyword searching know that they don't know, so to speak.

Table 142 Frequency of Using Keyword Searching on LUIS by Answers to Qu tion 16a

	Almost Every Time	More than 1/2 Time	Less than 1/2 Time	Almost Never
Agree	100(42.9%)	46(19.7%)	58(24.9%)	29(12.
Disagree	9(34.6%)	6(23.1%)	7(26.9%)	4(15.
Don't Know	10(32.3%)	2(6.5%)	7(22.6%)	12(38.

Percentages do not always equal 100% due to rounding.

Answers to question 16a next varied significantly with an option on question 22, about the keyword help screens, where users were asked to check all statements they agreed with. The ninth option was "their explanations are not clear." Those who checked this option definitely performed worse than the rest of the respondents on question 16a. (See Table 143.) They agreed less often and disagreed and indicated uncertainty more often. If their use of the keyword help screens affected their performance on this keyword knowledge tests, then the screen explanations were definitely not clear enough for them.

Table 143 Clarity of Keyword Help Screen Explanations by Answers to Qu tion 16a

	Explanations Not Clear	Didn't Check Option
Agree	20(60.6%)	215(82.7%)
Disagree	5(15.2%)	21(8.1%)
Don't Know	8(24.2%)	24(9.2%)

Percentages do not always equal 100% due to rounding.

Results on question 16a also varied significantly, to the .05 level, on question 25, about how satisfied the respondent was with the result of his/her last keyword search. Respondents rated those results on a scale of 1 to 4, with 1 being very satisfied and 4 being very unsatisfied. Results show a definite tendency toward less satisfaction as they move toward greater ignorant. (See Table 144.) In other words, the less correct knowledge the respondent had about keyword searching, the less likely s/he was to be satisfied with the results of the last keyword search. This tendency is illustrated perfectly for the agree-ers and the disagree-ers, and the tendency was present for the don't know group, also.

Table 144 Level of Satisfaction with Results of Last Keyword Search Answers to Question 16a

	1(Very Satisfied)	2	3	4(Very Unsatisfie
Agree	50(89.3%)	122(84.1%)	42(67.7%)	11(61.1%)
Disagree	1(1.8%)	11(7.6%)	9(14.5%)	4(22.2%)
Don't Know	5(8.9%)	12(8.3%)	11(17.7%)	3(16.7%)

Percentages do not always equal 100% due to rounding.

Answers to question 16a also showed their final significant variation, to .05, for question 26, which compares k= searching to a=, t=, and s= searching. There was very little difference in performance on question 16a between those who consider keyword searching superior and use it most of the time, and those who use it for subject searching, but use author and title searching when appropriate. (See Table 145.) In fact, those who said they use keyword most of the time agreed slightly less than the middle group, and indicated uncertainty slightly more. Those who see keyword searching as a last resort, however, definitely performed worse on question 16a than the other two groups, agreeing less, disagreeing more, and indicating uncertainty more. It is impossible to say, of course, whether they see keyword searching as a last resort because they know less about it, or they know less about it because they see it as a last resort.

Table 145 Comparison of Keyword Searching to a=,t=,s= by Answers to Qu
tion 16a

	K= Superior	K= Best for Subject	K= Last Res
Agree	40(85.1%)	129(85.4%)	57(68.7%)
Disagree	2(4.3%)	12(7.9%)	11(13.3%)
Don't Know	5(10.6%)	10(6.6%)	15(18.1%)

Percentages do not always equal 100% due to rounding.

The second statement under question 16 is about keyword searching allowing access to a phrase anywhere in LUIS. It showed the second highest level of agreement (correctness) on question 16, but had something of a drop from question 16a. (See Table 146.) Earlier in the paper, this factor has shown significant variation with status, frequency of LUIS searching, previous performance of keyword searching, learning of keyword searching availability from keyword help screens, not being aware that keyword searching was available, being aware of library handouts/announcements, keyword help screens, and library instruction classes at instructor request, as keyword searching instruction methods, and not being aware of any keyword searching instruction methods.

Table 146 Answers to Question 16b
Keyword searching makes it possible to search for a phrase anywhere in L
for library materials.

Agree	210(52.5%)
Disagree	42(10.5%)
Don't Know	126(31.5%)
Unusable Answer	0
Blank	19(4.8%)

Percentages do not always equal 100% due to rounding.

Faculty tended to perform worse on this question, as did those who search LUIS frequently, those who had never used keyword searching, those who were unaware of the availability of keyword searching and those who were unaware of the availability of any of the listed keyword searching instruction methods. Those who learned of keyword searching availability from keyword help screens, and those who were aware of library handouts/announcements, keyword help screens, and library instruction classes at instructor request as keyword searching instruction methods tended to perform better on question 16b.

Answers to question 16b showed significant variation, to the .05 level, for one option under question 21, about what methods of instruction were actually used to learn keyword searching. The ninth option is library handouts, and those who checked this option did better on question 16b than the rest of the respondents. (See Table 147.) They tended to agree more, disagree less, and indicate uncertainty less. The other options for learning about keyword searching did not result in any significant variation on this question.

Table 147 Learning about Keyword Searching Using Library Handouts by swers to Question 16b

	Used Library Handouts	Didn't Check Option
Agree	47(79.7%)	143(61.4%)
Disagree	3(5.1%)	32(13.7%)
Don't Know	9(15.3%)	58(24.9%)

Percentages do not always equal 100% due to rounding.

The respondents to question 16b also showed variation significant to .05 for the eighth option under question 22, about the keyword help screens. This option says "they don't have enough examples," and only 17 people who had answered question 16b checked it. (See Table 148.) Those who did check it did noticeably worse on this statement than the rest of the respondents did, agreeing less, disagreeing more, and saying they did not know the answer more. Although this is not the same option under question 22 which showed poor performance on question 16a, it is interesting that on the two statements from question 16 so far, options criticizing keyword help screens were chosen by groups that had significantly poor performance. For those respondents, the keyword help screens are not adequate.

Table 148 Not Enough Examples on Keyword Help Screens by Answers to Qu tion 16b

	Not Enough Examples	Didn't Check Option
Agree	7(41.2%)	183(66.5%)
Disagree	5(29.4%)	30(10.9%)
Don't Know	5(29.4%)	62(22.5%)

Percentages do not always equal 100% due to rounding.

Just as the results of question 16a did, answers to question 16b show variation significant to .05 on question 25, about satisfaction with the results of one's last keyword search. (See Table 149.) The tendency is not quite as clear cut as it was for question 16a, but it is there: generally as respondents showed poorer performance on question 16b, they were less satisfied with the result of their last keyword search. The exceptions to the pattern are that those who circled "2" (higher on the satisfaction scale) on question 25 disagreed slightly more with question 16b than those who circled "3," and those who circled "4" (very unsatisfied) indicated uncertainty at a lower level than those who circled "3."

Table 149 Level of Satisfaction with Results of Last Keyword Search Answers to Question 16b

	1(Very Satisfied)	2	3	4(Very Unsatisfie
Agree	42(76.4%)	94(65.3%)	37(59.7%)	7(38.9%)
Disagree	4(7.3%)	17(11.8%)	7(11.3%)	7(38.9%)
Don't Know	9(16.4%)	33(22.9%)	18(29%)	4(22.2%)

Percentages do not always equal 100% due to rounding.

Again just as for question 16a, the final question on which question 16b showed significant variation, to the .05 level, is number 26, comparing k= searching to a=, t=, and s= searching. (See Table 150.) Although the differences are slight when moving from one part of question 26 to another, answers to question 16b did vary with attitude toward keyword searching. As mentioned above, it is impossible to tell if attitude in this case is a result of ignorance, or a cause of it. Those who consider keyword searching superior and use it most of the time performed best on question 16b, and those who use keyword searching for subject inquiries and title and author where appropriate performed better than those who use keyword searching only as a last resort.

Table 150 Comparison of Keyword Searching to a=,t=,s= by Answers to Qu
tion 16b

	K= Superior	K= Best for Subject	K= Last Res
Agree	36(76.6%)	105(70%)	44(53%)
Disagree	4(8.5%)	14(9.3%)	14(16.9%)
Don't Know	7(14.9%)	31(20.7%)	25(30.1%)

Percentages do not always equal 100% due to rounding.

The third statement under question 16 is about typing in k to get keyword help screens and a screen where one can enter a long keyword search. This is fourth highest in agreement rates of the ten statements on question 16. (See Table 151.) Earlier in the paper, it has shown significant variation with status, previous use of a computer at work, previous performance of keyword searching, learning of keyword searching availability from a library instruction class/workshop, not being aware that keyword searching was available, being aware of keyword help screens as an instruction method for keyword searching, and not being aware of any listed keyword searching instruction methods.

Table 151 Answers to Question 16c
Just typing in k and pressing enter gets you to the keyword help scre
where you can read about keyword searching and/or enter a long keyw
search.

Agree	197(49.3%)
Disagree	29(7.3%)
Don't Know	155(38.8%)
Unusable Answer	0

Blank	19(4.8%)

Percentages do not always equal 100% due to rounding.

Faculty, those who had used a computer at work, those who were not aware keyword searching was available, and those who were unaware of any listed instruction methods for keyword searching performed worse on question 16c than did the rest of the respondents. Those who had done keyword searching previously, those who learned of the availability of keyword searching from a library instruction class/workshop, and those who were aware of keyword help screens as an instruction method for keyword searching, all performed better on this statement than the rest of the respondents.

The next question where results of question 16c show significant variation is on question 21; the second option listed for actually learning to do keyword searching is keyword help screens, and, understandably, the results on question 16c vary when this factor is tested. (See Table 152.) Those who checked this option tended to agree with statement 16c much more than those that did not check it, and they also disagreed less and indicated uncertainty less. Those that did indicate uncertainty probably were not aware that one could enter a long keyword search on the first keyword help screen, since that information is not highlighted. Presumably, if they used keyword help screens to learn keyword searching, they knew how to get to them.

Table 152 Use of Keyword Help Screens as a Keyword Searching Instruct
Method by Answers to Question 16c

	Used Keyword Help Screens	Didn't Check Opti
Agree	89(71.2%)	81(47.9%)
Disagree	6(4.8%)	14(8.3%)
Don't Know	30(24%)	74(43.8%)

Percentages do not always equal 100% due to rounding.

Answers to question 16c differ significantly with two statements under question 22, about the keyword help screens. The first option is to state "I was not aware of them," and it is obvious why this would vary with the results for 16c, which is a question about keyword help screens. (See Table 153.) Those who checked this option agreed at a much lower level, and indicated uncertainty at a much higher level, than the rest of the respondents. They actually disagreed at a slightly lower level, but this bears out that trend toward those who know they are ignorant on a topic not risking disagreement.

Table 153 Not Aware of Keyword Help Screens by Answers to Question 16c

	Not Aware of Keyw. Help Scrns	Didn't Check Opt
Agree	19(35.2%)	151(62.9%)
Disagree	3(5.6%)	17(7.1%)
Don't Know	32(59.3%)	72(30%)

Percentages do not always equal 100% due to rounding.

The other statement on question 22 about keyword help screens where answers to question 16c varied significantly was the ninth one: "their explanations are not clear." Those who checked this option generally performed worse on question 16c than the rest of the survey population. (See Table 154.) They agreed at a lower rate, and disagreed at a much higher rate, than the rest of the respondents, but indicated uncertainty at a slightly lower rate. It is difficult to interpret the possible meaning of this correlation.

Table 154 Keyword Help Screen Explanations not Clear by Answers to Quest 16c

	Explanations Not Clear	Didn't Check Option
Agree	15(44.1%)	155(59.6%)
Disagree	8(23.5%)	12(4.6%)
Don't Know	11(32.4%)	93(35.8%)

Percentages do not always equal 100% due to rounding.

The final factor for which results of question 16c showed significant differences is question 27, about attributions of failure for unsuccessful keyword searches. (See Table 155.) The group that performed best on question 16c was the group that checked "I'm not finding the right words for my topic" as a reason for an unsuccessful keyword search, and there is a good chance they are right in their perceptions, since they performed well above average on this question, at least. The worst performers on question 16c were those who checked "LUIS doesn't list material on my topic" as a reason for an unsuccessful keyword search; they might be supposed to be less knowledgeable about keyword searching than they seem to think they are. The other two groups, "my topic is too specific" and "I'm not finding the right words for my topic," performed at about the same level, and were not far below the overall averages.

Table 155 Reason for an Unsuccessful Keyword Search by Answers to Quest 16c

	Topic Too Specific	Not Finding Right Words	Don't Know Enough about Keyword	No Mater on LUIS
Agree	27(45.8%)	105(72.4%)	14(41.25%)	9(40.
Disagree	4(6.8%)	5(3.4%)	3(8.8%)	6(27.
Don't Know	28(47.5%)	35(24.1%)	17(50%)	7(31.

Percentages do not always equal 100% due to rounding.

Question 16d is about the implied "and" done in keyword searching when a phrase is entered without an operator. This statement was seventh in the percentage of respondents agreeing, so performance on it was comparatively poor. (See Table 156.) This is not surprising since it is a difficult concept that is not even always emphasized when users are instructed. This statement has shown comparatively little significant variation so far--those who have had previous experience with a computer at school for a computer course, those who have done keyword searching, those who learned of the availability of keyword searching from a library instruction class/workshop, not being aware that keyword searching is available, being aware of library handouts/announcements, keyword help screens, and library instruction classes at instructor request as keyword searching instruction methods, and not being aware of any listed keyword searching instruction methods had significant difference in replies to this question.

Table 156 Answers to Question 16d
In keyword searching, if you enter a phrase of two or more words, the wo
could be anywhere in the library material's record, not necessarily ri
together.

Agree	158(39.5%)
Disagree	44(11%)
Don't Know	175(43.8%)
Unusable Answer	1(.3%)
Blank	22(5.5%)

Percentages do not always equal 100% due to rounding.

Those who had used a computer at school for a computer course generally performed better on this statement, as did those who had done keyword searching before, those who learned of keyword searching availability from library instruction classes/workshops, and those who were aware of library handouts/announcements, keyword help screens, and library instruction classes at instructor request. Those who were not aware of keyword searching availability and those who were unaware of any of the listed keyword searching instruction methods tended to perform worse on this statement than the rest of the respondents.

Answers to question 16d showed variation significant to the .05 level on results for question 18, about how often keyword searching is used on LUIS. The three most frequent groups--almost every time LUIS is used, more than half the times, less than half the times--showed very similar results, but, oddly enough, those who checked that they did keyword searching less than half the times they searched LUIS performed slightly better on this question than the two groups of more frequent users. (See Table 157.) Those who said they almost never use keyword searching performed noticeably worse than the other three groups, though, agreeing much less, and disagreeing and indicating uncertainty much more.

Table 157 Frequency of Keyword Searching by Answers to Question 16d

	Almost Every Time	More than Half Times	Less than Half Times	Almost Never
Agree	62(52.5%)	29(54.7%)	41(56.2%)	10(22.2%)
Disagree	15(12.7%)	6(11.3%)	8(11%)	11(24.4%)
Don't Know	41(34.7%)	18(34%)	24(32.9%)	24(53.3%)

Percentages do not always equal 100% due to rounding.

Answers to question 16d show variation significant to .05 on two options on question 21, about what methods of instruction were actually used to learn keyword searching. The fourth option is a library instruction class/workshop, and those who learned to do keyword searching in this way performed better on question 16d than did the rest of the respondents. (See Table 158.) They agreed more, disagreed slightly less, and indicated uncertainty less.

Table 158 Learning to do Keyword Searching from a Library Instruct Class/Workshop by Answers to Question 16d

	Learned from Library Instruction Class	Didn't Check Option
Agree	64(59.3%)	80(43.5%)
Disagree	15(13.9%)	26(14.1%)
Don't Know	29(26.9%)	78(42.4%)

Percentages do not always equal 100% due to rounding.

The ninth option on question 21 also showed variation significant to .05 for results on question 16d; it is learning keyword searching from library handouts. Those who checked this option did better on statement 16d than the rest of the respondents. (See Table 159.) They agreed at a rather higher rate, disagreed less, and indicated uncertainty less than the rest of the survey population.

Table 159 Learning to do Keyword Searching from Library Handouts by Answ
to Question 16d

	Learned from Library Handouts	Didn't Check Option
Agree	38(64.4%)	106(45.4%)
Disagree	5(8.5%)	36(15.5%)
Don't Know	16(27.1%)	91(39.1%)

Percentages do not always equal 100% due to rounding.

The next point at which the answers to question 16d showed significant variation (at the .05 level) is on question 22, about the keyword help screens. The seventh option respondents might check about keyword help screens is "there are too many of them." Responses on question 16d varied significantly with this, but there were only 10 respondents who checked this, so the results are not that meaningful. Six of those who checked this option agreed with statement 16d, and four of them disagreed. This is in contrast with the rest of the respondents, 138 of 282, or 48.9%, of whom agreed with the statement, with 37, or 13.1%, disagreeing, and 107, or 37.9%, saying they did not know the answer. Those who checked this option performed better in agreeing more and indicating uncertainty less, but they disagreed more than the other group.

Question 24, which asks respondents about how many of the results from their last keyword search were useful, shows variation significant to .05 with answers to question 16d. (See Table 160.) The results are a bit unexpected; those who said none of them were useful generally performed worst on this question, but those who said almost all of them were useful performed second worst, and had noticeably worse performance than the two middle groups. The group that performed the best by far was the one that said most of the results were useful. It is difficult to interpret this result.

Table 160 Amount of Useful Materials from Last Keyword Search by Answers Question 16d

	None Useful	Some Useful	Most Useful	Almost All Use
Agree	4(23.5%)	77(49.4%)	56(60.9%)	5(27.8%)
Disagree	3(17.6%)	24(15.4%)	8(8.7%)	4(22.2%)
Don't Know	10(58.8%)	55(35.3%)	28(30.4%)	9(50%)

Percentages do not always equal 100% due to rounding.

The last question which shows significant variation with results of question 16d, again to the .05 level, is question 27, which deals with attributions for reasons for unsuccessful keyword searches. (See Table 161.) The all around best performers on this question were those who attributed lack of success in keyword searching to not finding the right words for their topic--more evidence that they might be right, since they seem more knowledgeable about keyword searching. Those who said their topics were too specific and those who said they didn't know enough about keyword searching performed at about the same level. Those who said that LUIS does not have material on their topics agreed with the statement at a comparatively high rate, but disagreed at a very high rate.

Table 161 Reasons for Unsuccessful Keyword Searches by Answers to Quest 16d

	Topic Too Specific	Not Finding Right Words	Don't Know about Keyword	No Mater on LUIS
Agree	25(42.4%)	84(58.3%)	15(44.1%)	10(47.6
Disagree	8(13.6%)	13(2.9%)	6(17.6%)	7(33.3
Don't Know	26(44.1%)	47(32.6%)	13(38.2%)	4(19%)

Percentages do not always equal 100% due to rounding.

Question 16e describes the functions of Boolean operators and names them. It was sixth in the ranks of agreement rates, so the performance on this was not especially good; well under half the respondents who answered this got it right. (See Table 162.) Earlier in the paper, it has varied significantly with previous experience with online dial-up databases and the OCLC terminal, previous performance of keyword searching, learning of the availability of keyword searching from a library instruction class/workshop, not being aware that keyword searching was available, being aware of library handouts, keyword help screens, and library instruction classes at instructor request as keyword searching instruction methods, and not being aware of any listed keyword searching instruction methods.

Table 162 Answers to Question 16e
Keyword searching allows you to combine topics together, use synonyms fo
topic, or get rid of a certain aspect of a topic by using "and," "or,"
"not" between words.

Agree	169(42.3%)
Disagree	25(6.3%)
Don't Know	175(43.8%)
Unusable Answer	1(.3%)
Blank	30(7.5%)

Percentages do not always equal 100% due to rounding.

Those who had previous experience with performing keyword searching, with online dial-up databases and with the OCLC terminal performed better on this statement, as did those who learned of the availability of keyword searching from a library instruction class/workshop, and those who were aware of library handouts, keyword help screens, and library instruction classes at instructor request as keyword searching instruction methods. Those who were unaware of the availability of keyword searching and those who were unaware of any of the listed keyword searching instruction methods performed worse than the rest of the respondents on this statement.

The results for question 16e showed significant variation, to the .05 level, with one option under question 21, about methods actually used to learn keyword searching. The fourth option is library instruction class/workshop, and, although the difference was not pronounced, those who checked this option performed somewhat better on this question than the rest of the respondents. (See Table 163) They agreed at a somewhat higher rate and indicated uncertainty at a somewhat lower rate, but they disagreed at a slightly higher rate also, than the rest of the survey population. This instruction method made some difference, but not a lot, in response. It also provides another possible instance of a group daring to disagree with a statement perhaps because they felt more informed about the topic.

Table 163 Use of a Library Instruction Class/Workshop as a Keyword Sear ing Instruction Method by Answers to Question 16e

	Library Inst. Class/Workshop	Didn't Check Option
Agree	70(58.3%)	83(50.6%)
Disagree	10(8.3%)	11(6.7%)
Don't Know	40(33.3%)	70(42.7%)

Percentages do not always equal 100% due to rounding.

One statement under question 22, about the keyword help screens, showed variation significant to the .05 level for answers on question 16e. The first statement available for respondents to check says "I was not aware of them." Those who checked this response generally performed worse than the rest of the respondents on question 16e. (See Table 164.) They agreed at a lower rate, and indicated uncertainty at a higher rate, but they disagreed at a lower rate--another indication that a group that felt less knowledgeable about keyword searching was less likely to risk disagreement.

Table 164 Being Unaware of Keyword Help Screens by Answers to Question 1

	Unaware of Keyword Help Scrns.	Didn't Check Option
Agree	22(42.3%)	131(56.5%)
Disagree	2(3.8%)	19(8.2%)
Don't Know	28(53.8%)	82(35.3%)

Percentages do not always equal 100% due to rounding.

Answers to question 16e showed significant variation with the results of question 25, which asked respondents to indicate satisfaction with the results of their last keyword search on a scale of 1 for very satisfied to 4 for very unsatisfied. (See Table 165.) For rates of agreement and saying they did not know the answer, performance became better as satisfaction got higher. Respondents agreed at a steadily climbing rate as they showed more satisfaction, and also indicated uncertainty at a steadily dropping rate. Disagreement was a bit more erratic, however, with those that circled "2" disagreeing at the lowest rate. Those that circled "4," though, disagreed at a much higher rate than the rest of the respondents. Those who performed better on this statement and were presumably more knowledgeable about keyword searching were more satisfied with the results of their last keyword search.

Table 165 Satisfaction with Results of Last Keyword Search by Answers
Question 16e

	1(Very Satisfied)	2	3	4(Very Unsatisfie
Agree	34(61.8%)	79(55.6%)	28(48.3%)	4(22.2%)
Disagree	4(7.3%)	7(4.9%)	5(8.6%)	5(27.8%)
Don't Know	17(30.9%)	56(39.4%)	25(43.1%)	9(50%)

Percentages do not always equal 100% due to rounding.

The final factor which shows significant variation related to results of question 16e is question 26, which asks respondents to compare k= searching to a=, t=, and s= searching. Those who indicated the most positive attitude toward keyword searching performed best on this question, with those with a more moderate attitude toward it performing only slightly worse. (See Table 166.) Those who considered keyword searching only as a last resort definitely performed worst on this question by fairly large margins. As alluded to earlier, one cannot be sure if these respondents dislike keyword searching because they are less knowledgeable about it, or are less knowledgeable about it because they dislike it.

Table 166 Comparison of Keyword Searching to a=,t=,s= by Answers to Qu
tion 16e

	K= Superior	K= Best for Subject	K= Last Resort
Agree	30(65.2%)	89(61%)	29(36.3%)
Disagree	2(4.3%)	8(5.5%)	9(11.3%)
Don't Know	14(30.4%)	49(33.6%)	42(52.5%)

Percentages do not always equal 100% due to rounding.

The sixth statement on question 16 is about stopwords in keyword searching. It received the fifth highest rate of agreement. (See Table 167.) It has had comparatively little significant variation with other factors earlier in the survey. The factors with which it has shown significant variation include previous performance of keyword searching, learning of keyword searching availability from a library instruction class/workshop, not being aware of the availability of keyword searching, being aware of library handouts/announcements, keyword help screens, and information desk assistance as keyword searching instruction methods, and not being aware of any listed keyword searching instruction methods.

Table 167 Answers to Question 16f
Keyword searching on LUIS will not search for certain common words, such
"of," "the," or "in."

Agree	178(44.5%)

Disagree	17(4.3%)
Don't Know	176(44%)
Unusable Answers	0
Blank	29(7.3%)

Percentages do not always equal 100% due to rounding.

Those who had previously performed keyword searching, those who learned of the availability of keyword searching from a library instruction class/workshop, and those who were aware of library handouts/announcements, keyword help screens, and information desk assistance as keyword searching instruction methods performed better on question 16f than the rest of the respondents. Those who were unaware of the availability of keyword searching or who were unaware of any of the listed keyword searching instruction methods performed worse than the rest of the respondents.

Answers to question 16f showed variation significant to .05 with two options under question 22, about the keyword help screens. The first option is to check that "I was not aware of them." Those who checked this option performed noticeably worse on this question than did those who did not check it. (See Table 168.) They agreed much less, disagreed somewhat more, and indicated uncertainty much more. This is a case where the presumably more knowledgeable group disagreed less, rather than more, than the more ignorant group.

Table 168 Being Unaware of Keyword Help Screens by Answers to Question 1

	Unaware of Keyword Help Screens	Didn't Check Option
Agree	20(37%)	135(57.4%)
Disagree	5(9.3%)	11(4.7%)
Don't Know	29(53.7%)	39(37.9%)

Percentages do not always equal 100% due to rounding.

The sixth option under question 22 is to say that the keyword help screens "...are too tightly packed with information."

Those who checked this option showed variation significant to .05 on question 16f results. Only nine people who answered question 16f checked this, though, so the connections are only indicative. They show rather mixed results, with those who checked this option agreeing with the statement at the rate of 6 of 9, or 66.7%, versus 149 of 280, or 53.2%, of the rest of the respondents. Those who checked the option disagreed, though, at the rate of 2, or 22.2%, versus 14, or 5%, of the rest of the survey population. Only one person who checked this option answered "don't know" on question 16f--11.1%, versus 117, or 41.8%, of those who did not check the option. These results should not be taken too seriously because of the small numbers.

The final factor on which question 16f results showed significant variation, to the .05 level, is question 26, comparing a=, t=, and s= searching to k= searching. (See Table 169.) Generally, the more positive the attitude toward keyword searching, the better the performance for agreement and indication of uncertainty. For disagreement, the situation is reversed, with those who use keyword searching most of the time disagreeing at a higher rate than those who use it only for subject searching, who are in turn higher in disagreement than those who use it only as a last resort. This is telling evidence for the supposition that some of those who feel more comfortable with keyword searching getting a wrong concept more firmly in their heads than those who are not as comfortable with it.

Table 169 Comparison of Keyword Searching to a=,t=,s= by Answers to Qu
tion 16f

	K= Superior	K= Best for Subject	K= Last Res
Agree	31(66%)	79(53.4%)	41(49.4%)

Disagree	4(8.5%)	10(6.8%)	1(1.2%)
Don't Know	12(25.5%)	59(39.9%)	41(49.4%)

Percentages do not always equal 100% due to rounding.

The seventh statement of keyword knowledge under question 16 is about positional operators in keyword searching. Agreement was lowest of all ten statements for this item. (See Table 170.) So far in the paper, this item has shown significant variation with previous experience with online dial-up databases, previous performance of keyword searching, learning of keyword searching availability from a librarian instruction class/workshop, not being aware that keyword searching was available, being aware of library handouts/announcements and keyword help screens as keyword searching instruction methods, and not being aware of any listed keyword searching instruction methods.

Table 170 Answers to Question 16g
Keyword searching allows you to make sure that certain words occur ri
together or in the same section of a record, by using "adj" and "same" w
your keywords.

Agree	96(24%)
Disagree	20(5%)
Don't Know	252(63%)
Unusable Answers	0
Blank	32(8%)

Percentages do not always equal 100% due to rounding.

Those who have previous experience with online dial-up databases and those who have previously done keyword searching performed better than the rest of the respondents on statement 16g, as did those who learned of keyword searching availability from library instruction classes/workshops, and those who were aware of library handouts/announcements and keyword help screens as keyword searching instruction methods. Those who were unaware of the availability of keyword searching and those who were not aware of any listed keyword searching instruction methods performed worse than the rest of the respondents.

Answers to question 16g showed differences significant to the .05 level for question 18, about how often the respondent uses keyword searching on LUIS. (See Table 171.) The results on this correlation are interesting, since those that performed the best were in the group that said they use keyword searching more than half the times they use LUIS, not the group that said they use keyword searching almost every time they use LUIS. The latter group and those who said they use keyword searching less than half the times they use LUIS performed at about the same level, except the more frequent keyword searching disagreed with the statement more and indicated uncertainty somewhat less. Those who almost never use keyword searching performed much worse than the other three groups, except that they disagreed least. Question 18 has shown quirky patterns for questions 16a and 16d previously in the paper.

Table 171 Frequency of Using Keyword Searching on LUIS by Answers to Qu
tion 16g

	Almost Every Time	More than 1/2 Time	Less than 1/2 Time	Almost Never
Agree	36(30.8%)	20(37.7%)	22(30.1%)	6(13
Disagree	12(10.3%)	2(3.8%)	2(2.7%)	1(2.
Don't Know	59(69%)	31(58.5%)	49(67.1%)	37(84

Percentages do not always equal 100% due to rounding.

Answers to question 16g show significant variation on two options under question 21, about what methods were actually used to learn keyword searching. The fourth option is from a library instruction class/workshop, and this shows significant differences when answers to statement 16g are studied. (See Table 172.) Those who checked this option performed better on question 16g than those who did not check it, except they disagreed more than the latter group. They agreed at a noticeably above-average rate, and indicated uncertainty at rather lower rate, too.

Table 172 Learning Keyword Searching from a Library Instruct Class/Workshop by Answers to Question 16g

	Learned from Lib. Inst. Class	Didn't Check Option
Agree	43(41%)	41(22.4%)
Disagree	8(7.6%)	9(4.9%)
Don't Know	54(51.4%)	133(72.7%)

Percentages do not always equal 100% due to rounding.

The sixth option under question 21, assistance from a passing library staff member, also shows significant variation for results on question 16g, although only to the .05 level, and there were comparatively few (21) respondents to 16g that checked this option. (See Table 173.) The group in question did very poorly on question 16g, only 2 of them agreeing, 3 disagreeing, and the rest indicating uncertainty. This is definitely worse than those who did not check this option. Passing library staff members who helped these people were evidently not in the habit of telling them about position operators, but that is not too surprising.

Table 173 Learning Keyword Searching with Assistance from a Passing Libr Staff Member

	Learned from Lib. Staff Mbr.	Didn't Check Option
Agree	2(9.5%)	82(30.7%)
Disagree	3(14.3%)	14(5.2%)
Don't Know	16(76.2%)	171(64%)

Percentages do not always equal 100% due to rounding.

Answers to question 16g showed variation significant to the .05 level with two options under question 22, about the keyword help screens. The third option is that the keyword help screens "...are very useful to me." Those who checked this option generally performed better on question 16g than those who did not check it. (See Table 174.) They agreed more and indicated uncertainty less, but, in a recurring pattern mentioned above, they disagreed at a higher level than the group that did not indicate that the keyword help screens were very useful. Generally, though, it does appear that the keyword screens may have been somewhat helpful to them in this area of keyword searching knowledge.

Table 174 Keyword Help Screens Very Useful by Answers to Question 16g

	Keyw. Help Screens Useful	Didn't Check Option
Agree	35(37.2%)	49(25.3%)
Disagree	8(8.5%)	9(4.6%)
Don't Know	51(54.3%)	136(70.1%)

Percentages do not always equal 100% due to rounding.

The tenth option on question 22 about keyword help screens also showed variation significant to .05 when the results of question 16g were examined. This option says the keyword help screens "...are just right for their purpose." Responses repeat the pattern on the third option on question 22 pretty closely, except the disagreement rate is even higher, and the uncertainty rate is lower, for those who checked the tenth option. (See Table 175.) They also apparently found the keyword help screens somewhat helpful in this knowledge area.

Table 175 Keyword Help Screens Just Right for their Purpose by Answers Question 16g

	Keyword Help Scrns. Just Right	Didn't Check Option
Agree	17(37%)	67(27.7%)
Disagree	6(13.1%)	11(4.5%)
Don't Know	23(50%)	164(67.8%)

Percentages do not always equal 100% due to rounding.

Answers to question 16g show variation significant to the .05 level on question 26, about comparing k= searching to a=, t=, and s= searching. Generally, the more positive the attitude toward keyword searching, the better the performance on agreeing with the statement and indicating uncertainty. (See Table 176.) Those who use keyword searching most of the time and consider it superior agree at the highest rate with the statement, and indicate uncertainty at the lowest rate, but they also disagree at the highest rate, although only slightly higher than the other two groups. Those who say they only use keyword searching as a last resort had the lowest agreement rate and the highest uncertainty rate, but the lowest disagreement rate, a pattern seen before. Also mentioned before is the fact that it is impossible to tell if negative attitudes cause ignorance or ignorance causes negative attitudes.

Table 176 Comparison of Keyword Searching to a=,t=,s= by Answers to Qu
tion 16g

	K= Superior	K= Best for Subject	K= Last Res
Agree	19(41.3%)	49(33.1%)	15(18.1%)
Disagree	3(6.5%)	8(5.4%)	4(4.8%)
Don't Know	24(52.2%)	91(61.5%)	64(77.1%)

Percentages do not always equal 100% due to rounding.

The final factor which shows significant variation, to the .05 level, on answers to question 16g is question 27, about attributions for causes of unsuccessful keyword searches. Generally, the worst performance on question 16g was by those who attributed their unsuccessful keyword searches to having too specific a topic; they agreed at the lowest rate and indicated uncertainty at the highest rate, although they disagreed at the second lowest rate. (See Table 177.) In this area of knowledge, this group may in fact need to know more about keyword searching, rather than having too specific a topic. The second worst performance was, however, by those who said they did not know enough about keyword searching. Best performance was by those who said they were not finding the right words for their topic. Again, the disagreement rate was an exception, since the latter group disagreed at the highest rate. This is more evidence that this group may be right in their attribution; at least they seem to know more than the others about keyword searching.

Table 177 Reason for an Unsuccessful Keyword Search by Answers to Quest 16g

	Topic Too Specific	Not Finding Right Words	Don't Know Enough about Keyword	No Mater on LUIS
Agree	9(15.8%)	55(38.7%)	7(20.6%)	7(33.
Disagree	3(5.3%)	11(7.8%)	2(5.9%)	0
Don't Know	45(78.9%)	76(53.5%)	25(73.5%)	14(66.

Percentages do not always equal 100% due to rounding.

The next statement under question 16 is about field limiting in keyword searching. This received the second lowest rate of agreement of all the statements of keyword knowledge. (See Table 178.) Earlier in the paper, this statement has shown significant variation with status, previous experience with an OCLC terminal, previous performance of keyword searching, learning of keyword searching availability from a librarian and from library instruction classes/workshops, not being aware of the availability of keyword searching, and being aware of keyword help screens as a keyword searching instruction method.

Table 178 Answers to Question 16h
Keyword searching allows you to limit your search to certain sections o record by typing in .au. for author, .ti. for title, and .su. for subj after the keyword.

Agree	116(29%)
Disagree	40(10%)
Don't Know	214(53.5%)
Unusable Answer	0
Blank	30(7.5%)

Percentages do not always equal 100% due to rounding.

ISU freshmen performed best on question 16h, and faculty performed worst. Those who had previous experience with an OCLC terminal, those who had previously done keyword searching, those who learned of the availability of keyword searching from a librarian or from a library instruction class/workshop, and those who were aware of the availability of keyword help screens as a keyword searching instruction method all performed better on this question than other respondents. Those who were unaware of keyword searching availability had poorer performance on this statement than the rest of the respondents.

Results of question 16h show significant variation, to the .05 level, on question 20, about how difficult use of Boolean operators was to learn. Results on this correlation are a bit quirky. (See Table 179.) Progression from good performance to poor performance on question 16h is clear for those who circled "1" for very easy, "2," and "3," but those who circled "4" for very difficult performed better than the "2" and "3" groups. They were second only to the "1" group, and they did disagree at a somewhat lower rate than the "1" group. The group that circled "4" had only 27 members, though, so it would not seem as reliable an indicator as the larger groups. It is probably safe to say that, generally, the better the performance on question 16h, the more likely the respondent was to perceive learning Boolean operators as easy.

Table 179 Difficulty of Learning Boolean Operators by Answers to Quest 16h

	1(Very Easy)	2	3	4(Very Difficult)
Agree	28(58.3%)	36(40.9%)	17(23.9%)	13(48.1%)
Disagree	5(10.4%)	13(14.8%)	12(16.9%)	2(7.4%)
Don't Know	15(31.3%)	39(44.3%)	42(59.2%)	12(44.4%)

Percentages do not always equal 100% due to rounding.

Answers to question 16h show significant variation on two options under question 21, about methods actually used to learn keyword searching. One of the variations is significant to .05, and one is significant to .01. The second option, LUIS keyword help screens, shows variation with statement 16h results significant to .01. (See Table 180.) Those who checked this option as a method of learning keyword searching definitely performed better than the rest of the respondents on question 16h. They agreed at a noticeably higher rate, disagreed at a slightly lower rate, and indicated uncertainty at quite a lower rate.

Table 180 Learning Keyword Searching from LUIS Keyword Help Screens Answers to Question 16h

	Learned from Keyword Help Screens	Didn't Check Option
Agree	57(45.6%)	47(28.5%)
Disagree	14(11.2%)	21(12.7%)
Don't Know	54(43.2%)	97(58.8%)

Percentages do not always equal 100% due to rounding.

The fourth option under question 21 is learning keyword searching from a library instruction class/workshop, and this option shows variation to .05 with answers to question 16h. (See Table 181.) Generally, those who checked this option performed better on question 16h, agreeing at a higher rate and indicating uncertainty at a lower rate, but they disagreed at a higher rate than the rest of the respondents. This continues an earlier pattern that has often appeared for groups of respondents that may consider themselves more informed about keyword searching, where some of them have firmly gotten incorrect "facts" in their minds.

Table 181 Learning Keyword Searching from a Library Instruct Class/Workshop by Answers to Question 16h

	Learned from Lib. Instr. Class	Didn't Check Option
Agree	47(44.3%)	57(31%)
Disagree	16(15.1%)	19(10.3%)
Don't Know	43(40.6%)	108(58.7%)

Percentages do not always equal 100% due to rounding.

Three options under question 22, about the keyword help screens, show significant differences when correlated with the results of question 16h, two of them at the .05 level and one at the .01 level. The third statement respondents could check about keyword help screens is "they are very useful to me." Generally, those who checked this option performed better than the rest of the respondents. (See Table 182.) They agreed at a higher rate and indicated uncertainty at a lower rate than the rest of the respondents. They disagreed at a somewhat higher rate, however. There seems to be some evidence that the keyword help screens were useful to these respondents.

Table 182 Keyword Help Screens Very Useful by Answers to Question 16h

	Keyword Help Scns. Very Useful	Didn't Check Option
Agree	43(45.7%)	61(31.1%)
Disagree	13(13.8%)	22(11.2%)
Don't Know	38(40.4%)	113(57.7%)

Percentages do not always equal 100% due to rounding.

The sixth statement under question 22 about keyword help screens says "they are too tightly packed with information." This option showed variation significant to .05 with answers to question 16h. Only nine respondents checked this option who answered question 16h, though, so the numbers are not very meaningful. Seven of these respondents, or 77.8%, agreed with the statement on 16h, and two, or 22.2%, of them said they did not know the answer. For the rest of the respondents, 97 of 281, or 34.5%, of them agreed, 35, or 12.5%, disagreed, and 149, or 53%, indicated uncertainty. These results cannot be taken too seriously, but it is interesting that such a high percentage of even a small group got the question right.

The tenth statement under question 22 says that the keyword help screens "...are just right for their purpose." This statement shows variation significant to .01 with answers to question 16h. (See Table 183.) Those who checked this statement agreed at a somewhat higher rate with the statement than the rest of the respondents, and they indicated uncertainty at a much lower rate, but they disagreed at quite a high level--almost a quarter of them disagreed with the statement. Since those who agreed with this statement about the keyword help screens might be presumed to have read them and found them useful, this finding supports the idea that they might also have been more likely to risk disagreement with the statement when they did not absorb the correct information.

Table 183 Keyword Help Screens Just Right for their Purpose by Answers Question 16h

	Keyword Help Scns. Just Right	Didn't Check Option
Agree	19(41.3%)	85(34.8%)
Disagree	11(23.9%)	24(9.8%)
Don't Know	16(34.8%)	135(55.3%)

Percentages do not always equal 100% due to rounding.

The next point at which question 16h shows significant variation, to the .05 level, is on question 24, about how many of the materials listed in the last keyword search were useful. Those who performed worst on question 16h were the people who checked that none of them were useful--that is, they agreed at the lowest rate, indicated uncertainty at the highest rate, and disagreed at the second lowest rate. (See Table 184.) Those who checked "some of them" performed second worst, with the highest disagreement rate. The all round best performers, though, were those who checked "most of them," not the ones who checked "all of them." This is similar to the results on question 16d in that this group also performed best on that question. It is still difficult to speculate on reasons for this.

Table 184 Amount of Useful Materials from Last Keyword Search by Answers Question 16h

	None Useful	Some Useful	Most Useful	Almost All Use
Agree	3(17.6%)	51(32.7%)	42(46.2%)	7(38.9%)
Disagree	2(11.8%)	26(16.7%)	4(4.4%)	1(5.6%)
Don't Know	12(70.6%)	79(50.6%)	45(49.5%)	10(55.6%)

Percentages do not always equal 100% due to rounding.

Answers to question 16h also show variation significant to .05 with the next question, question 25, about how satisfied the respondent was with the results of the last keyword search done. There is a clear and pronounced pattern of better performance on question 16h connecting with greater satisfaction with results of the last keyword search performed. (See Table 185.) For each satisfaction group, moving from very satisfied to very unsatisfied, there is a definite progression from greater agreement, less disagreement, and less uncertainty to lower agreement, more disagreement, and greater uncertainty. The more respondents knew about field limiting in keyword searching, the more satisfied they were with the results of their last keyword search. This was also true of questions 16a, 16b, and 16e, about being able to search for single words and phrases with keyword searching, and about Boolean operators.

Table 185 Satisfaction with Results of Last Keyword Search by Answers Question 16h

	1(Very Satisfied)	2	3	4(Very Unsatisfie
Agree	28(50%)	52(36.6%)	19(30.6%)	1(5.6%)
Disagree	6(10.7%)	15(10.6%)	9(14.5%)	3(16.7%)
Don't Know	22(39.3%)	75(52.8%)	34(54.8%)	14(77.8%)

Percentages do not always equal 100% due to rounding.

The final factor which shows significant variation with results of question 16h is question 26, about attitudes toward keyword searching, as opposed to a=, t=, and s= searching. The more positive the attitude toward keyword searching, the better the performance on question 16h. (See Table 186.) Those who use keyword searching most of the time and consider it superior agreed with the statement most, disagreed least, and indicated uncertainty least. Those who use it only as a last resort, agreed the least, disagreed the most, and indicated uncertainty the most. As mentioned earlier, it is questionable what causes what, between ignorance and negative attitudes.

Table 187 Comparison of Keyword Searching to a=,t=,s= by Answers to Qu tion 16h

	K= Superior	K= Best for Subject	K= Last Res
Agree	25(53.2%)	61(41.2%)	16(19%)
Disagree	3(6.4%)	16(10.8%)	12(14.3%)
Don't Know	19(40.4%)	71(48%)	56(66.7%)

Percentages do not always equal 100% due to rounding.

The ninth test of keyword knowledge is statement 16i, about truncation using a dollar sign ($) in keyword searching. This statement received the third lowest disagreement rate of all the statements in question 16. (See Table 188.) Previously in the discussion, results for question 16i have been shown to vary significantly with frequency of LUIS searching, previous experience with no other computer systems, CD-ROM databases, online dial-up databases, and a computer at school for a non-computer course, previous performance of keyword searching, learning of keyword searching availability from a library instruction class/workshop, not being aware of the availability of keyword searching at all, being aware of library handouts/announcements, keyword help screens, and library instruction classes at instructor request as keyword searching instruction methods, and not being aware of any listed keyword searching instruction methods at all.

Table 188 Answers to Question 16i
Keyword searching allows you to use a dollar sign ($) at the end o
keyword if you want to find more than one word ending, such as comput
for computer, computers, computerized, etc.

Agree	139(34.8%)
Disagree	21(5.3%)
Don't Know	208(52%)
Unusable Answers	0
Blank	32(8%)

Percentages do not always equal 100% due to rounding.

Those who searched LUIS more frequently generally performed better on question 16i, as did those who had done CD-ROM searching, used online dial-up databases, and used a computer at school for a non-computer course, those who had done keyword searching before, those who learned of keyword searching availability library instruction classes, and those who were aware of library handouts/announcements, keyword help screens, and library instruction classes at instructor request as methods of keyword searching instruction. Those who had not previously used any computer systems, those who were unaware of the availability of keyword searching, and those who were unaware of any of the listed keyword searching instruction methods performed worse on this statement.

The next factor which shows significant variation with the results of question 16i, albeit only to the .05 level, is question 19, about the difficulty of learning keyword searching. The results are a bit erratic; first of all, only seven people circled "4" for very difficult, and all of them did not know the answer to 16i. (See Table 189.) Not unexpectedly, the best general performance on question 16i came from the group that circled "1" for very easy, although they did disagree at a slightly higher rate than the group that circled "2." The second best performance, though--notably better than the third best--came from the group that circled "3," on the difficult "half" of the scale. Clearly, some people that perceived keyword searching as fairly easy are not necessarily well informed about it.

Table 189 Difficulty of Learning Keyword Searching by Answers to Quest 16i

	1(Very Easy)	2	3	4(Very Difficul
Agree	64(53.8%)	43(38.4%)	21(48.8%)	0
Disagree	8(6.7%)	7(6.3%)	3(7%)	0
Don't Know	47(39.5%)	62(55.4%)	19(44.2%)	7(100%)

Percentages do not always equal 100% due to rounding.

Answers to question 16i also show variation significant to .05 on the next question, number 20, about the difficulty of learning to use Boolean operators. There is a fairly clear progression of improving performance moving from those who circled "1" for very easy, to those who circled "4" for very difficult. (See Table 190.) Those who circled "1" performed very well on this statement; none of them even disagreed with it. Those who circled "2" disagreed a bit more than those that circled "3," but generally the pattern is clear. The easier the respondent perceived learning to use Boolean operators to be, the better the performance on question 16i.

Table 190 Difficulty of Learning to Use Boolean Operators by Answers Question 16i

	1(Very Easy)	2	3	4(Very Difficu
Agree	32(66.7%)	44(50%)	29(40.8%)	10(37%)
Disagree	0	10(11.4%)	5(7%)	3(11.1%)
Don't Know	16(33.3%)	34(38.6%)	37(52.1%)	14(51.9%)

Percentages do not always equal 100% due to rounding.

Three of the options under question 21, about methods actually used to learn keyword searching, show significant variation with answers to question 16i, two of them at the .05 level, and one at the .01 level. The second option for learning keyword searching is the LUIS keyword help screens, and this item shows variation significant to .05 with the results of question 16i. (See Table 191.) Those who checked this option generally performed better than the rest of the respondents, except for disagreeing at a higher rate--another support for the earlier-mentioned idea that some of those who feel better informed about keyword searching are more likely to risk disagreement with a statement. Those who had used the keyword help screens did agree with question 16i at a noticeably higher rate and indicate uncertainty at a noticeably lower rate than the rest of the respondents.

Table 191 Learning Keyword Searching from LUIS Keyword Help Screens
Answers to Question 16i

	Learned from Keyword Help Screens	Didn't Check Option
Agree	66(52.8%)	63(38.4%)
Disagree	9(7.2%)	9(5.5%)
Don't Know	50(40%)	92(56.1%)

Percentages do not always equal 100% due to rounding.

The next point at which answers to question 16i vary significantly with a factor is on the fourth option on question 21, learning keyword searching from a library instruction class/workshop. Those who learned keyword searching from a library instruction class/workshop clearly performed better on question 16i, about truncation. (See Table 192.) They performed better, in fact, than those who learned from LUIS keyword help screens. They agreed almost 25% more than those who did not check learning from a library instruction class/workshop, they disagreed slightly less, and they indicated uncertainty much less. This is a contravention of the pattern that has appeared earlier of those who are presumably more informed about keyword searching getting wrong "facts" more firmly in their heads than those who are not as informed. This group learned truncation very well.

Table 192 Learning Keyword Searching from a Library Instruct
Class/Workshop by Answers to Question 16i

	Learned from Lib. Instruction Class	Didn't Check Option
Agree	64(60.4%)	65(35.5%)
Disagree	6(5.7%)	12(6.6%)
Don't Know	36(34%)	106(57.9%)

Percentages do not always equal 100% due to rounding.

The seventh option under question 21 shows variation significant to .05 for the results of question 16i, and it is learning keyword searching from a friend or someone at the next terminal. Those who learned keyword searching in this way did noticeably worse on question 16i than the rest of the respondents. (See Table 193.) They agreed at quite a lower rate, disagreed at a higher rate, and indicated uncertainty at a slightly higher rate. Knowledge about truncation is evidently not one of the things passed on in peer learning about keyword searching.

Table 193 Learning Keyword Searching from a Friend or Someone at the N
Terminal by Answers to Question 16i

	Learned from Peer	Didn't Check Option
Agree	17(33.3%)	112(47.1%)
Disagree	7(13.7%)	11(4.6%)
Don't Know	27(52.9%)	115(48.3%)

Percentages do not always equal 100% due to rounding.

Results of question 16i also show significant variation on two options under question 22, about the keyword help screens. The sixth option is that the keyword help screens "...are too tightly pack with information," and this option shows significant variation with answers to question 16i. Only nine respondents who answered 16i checked this, though, so the numbers are very small. All nine of them agreed with the statement on 16i, as opposed to 120 of 280, or 42.9%, of the rest of the respondents agreeing, 18, or 6.4%, disagreeing, and 142, or 50.7%, indicating uncertainty. Those who think the keyword help screens are too tightly packed with information still managed to pick out information on truncation, evidently.

The variation on the ninth option under question 22 is significant, too, when results of question 16i are examined, and the numbers are a bit more meaningful, although not large (32 respondents overall.) The option is that keyword help screens' "...explanations are not clear." (See Table 194.) The pattern is not clear, though, for this group's responses. They performed slightly worse than those who did not check the option on agreement, much worse on disagreement, but better on indication of uncertainty. They seem to have performed worse than the rest of the respondents on this item, indicating again that the explanations are, indeed, not clear enough for them.

Table 194 Keyword Help Screens' Explanations Not Clear by Answers to Qu
tion 16i

	Explanations Not Clear	Didn't Check Opti
Agree	14(43.8%)	115(44.7%)
Disagree	6(18.8%)	12(4.7%)
Don't Know	12(37.5%)	130(50.6%)

Percentages do not always equal 100% due to rounding.

Results on question 16i next showed significant variation on question 24, about how many of the materials obtained in the last keyword search were useful. The results on this question when correlated with 16i are very similar to what was shown on questions 16d and 16h, about the implied "and" and field limiting, respectively. The group that performs worst on 16i, although they did not disagree at all, is the group that checked that none of the results were useful--the same as the earlier two questions. (See Table 195.) Again, however, like the earlier results, the second worst performance comes from the group that checked that all of the results were useful. Also like the earlier questions, on 16i, the best performance came from those who said that most of the results were useful. Are those who say all the results of their last keyword search were useful being unreasonably uncritical of their experience? Did they all do searches so simple that all the results would be useful? It is still difficult to speculate.

Table 195 Amount of Useful Materials from Last Keyword Search by Answers Question 16i

	None Useful	Some Useful	Most Useful	Almost All Use
Agree	4(23.5%)	63(40.6%)	54(59.3%)	6(33.3%)
Disagree	0	13(8.4%)	3(3.2%)	1(5.6%)
Don't Know	13(76.5%)	79(51%)	34(37.4%)	11(61.1%)

Percentages do not always equal 100% due to rounding.

The final significant variation related to answers to question 16i is on question 26, about comparing keyword searching to a=, t=, and s= searching. The more positive the attitude toward keyword searching, the better the general performance on question 16i. (See Table 196.) Those who said they use keyword searching most of the time and find it superior agreed with statement 16i the most and indicated uncertainty the least; they were in the middle on disagreement. Those who considered keyword searching only as a last resort had the lowest agreement rate with 16i and the highest "don't know" rate, but the lowest disagreement rate--probably, though, only because they did not feel well enough informed about keyword searching to disagree with the statement. The "moderate" group, those who checked that they use keyword searching for subject inquiries, but still use a= and t= searching when appropriate, fell in the middle of the other two groups on agreement and indication of uncertainty, but had the highest disagreement rate.

Table _196_ Comparison of Keyword Searching to a=,t=,s= by Answers to Qu
tion 16i

	K= Superior	K= Best for Subject	K= Last Res
Agree	28(59.6%)	72(48.6%)	27(32.5%)
Disagree	2(4.3%)	11(7.4%)	2(7.4%)
Don't Know	17(36.2%)	65(43.9%)	54(65.1%)

Percentages do not always equal 100% due to rounding.

The tenth and final statement under question 16 is not directly about keyword searching, but has implications for it. It is about using Library of Congress Subject Headings for correct s= searching on LUIS. It had the third highest agreement rate of the ten statements, but still only 50% of the respondents were aware of this important distinction. It is interesting to note that it had the highest disagreement rate of any of the statements--almost 15%. Over a quarter of the respondents checked that they did not know the answer. (See Table 197.) This supports what many librarians probably suspected--many respondents do not understand the s= mode of searching on NOTIS, and probably have performed many unnecessarily abortive searches.

Table _197_ Answers to Question 16j
To do a search on LUIS using the subject (s=) mode that will work proper
you must have a valid Library of Congress Subject Heading.

Agree	200(50%)
Disagree	58(14.5%)
Don't Know	105(26.3%)
Unusable Answers	0
Blank	37(9.3%)

Percentages do not always equal 100% due to rounding.

Earlier in the paper answers to question 16j have shown significant differences when looking at the factors of status, previous experience with a computer at school for a computer course, previous performance of keyword searching, learning of keyword searching availability from a librarian or from a library instruction class/workshop, not being aware of the availability of keyword searching, being aware of library handouts/announcements and keyword help screens as keyword searching instruction methods, and not being aware of any listed keyword searching instruction methods.

A higher percentage of faculty performed poorly on question 16j than did student groups. Those who had computer experience at school with a computer course, those who had previously done keyword searching, those who learned of the availability of keyword searching from a librarian or a library instruction class/workshop, and those who were aware of library handouts/announcements and keyword help screens as keyword searching instruction methods generally performed better on statement 16j. Those who were not aware of keyword searching availability and those who were not aware of any listed keyword searching instruction methods performed worse on this statement, even though it was not directly about keyword searching. This would indicate that these people might be less informed about LUIS in general, as opposed to just keyword searching.

Perhaps because it is not directly about keyword searching, this statement's results do not show much further significant variation with the rest of the survey. Only one question, question 18, about how often keyword searching is done on LUIS, shows significant variation with results of question 16j, and they are only significant to .05. The results are interesting, if erratic; those who say they use keyword searching more than half the times they use LUIS performed best on this question, with almost 3/4 of them agreeing. (See Table 198.) They had the lowest disagreement and uncertainty rates, too. The highest disagreement rate was that of the group that said they use keyword searching almost every time they use LUIS, although they had the second highest agreement rate and second lowest uncertainty rate. Over twenty percent of these respondents use keyword searching most of the time without understanding at all one of the advantages of using keyword searching--that one does not need a correct Library of Congress Subject Heading! The groups that said they use keyword searching less than half the time they use LUIS and almost never use it performed progressively worse on this question. The group that almost never uses keyword searching is most ignorant of this fact which might give them a reason to do k= searching more often; they might be able to do it more often when appropriate, if they were more informed.

Table 198 Frequency of Using Keyword Searching on LUIS by Answers to Qu tion 16j

	Almost Every Time	More than 1/2 Time	Less than 1/2 Time	Almost Never
Agree	70(60.9%)	37(71.2%)	43(59.7%)	19(42
Disagree	25(21.7%)	6(11.5%)	9(12.5%)	8(17
Don't Know	20(17.4%)	9(17.3%)	20(27.8%)	18(40

Percentages do not always equal 100% due to rounding.

To summarize, results for the ten statements under question 16 show many interesting significant variations. Four of the statements varied significantly with the results of question 18, about how often keyword searching is done. For questions 16a, 16d, 16g, and 16j, the more often keyword searching is done, the more likely the respondents were to perform better on the statements. On statements 16h and 16i, the more difficult users perceived Boolean searching to be, the more likely they were to perform poorly on the statements.

On question 21, about what methods the users actually utilized to learn keyword searching, five of the methods show significant variation with statements from question 16. Questions 16c, 16h, and 16i show better performance by those who learned keyword searching via LUIS keyword help screens. Half of the keyword knowledge statements--16d, 16e, 16g, 16h, and 16i--showed better performance by those who learned keyword searching from library instruction classes/workshops. Statements 16b and 16d showed better performance for those who used library handouts to learn keyword searching.

Question 22, about keyword help screens, show a number of variations related to the statements of keyword knowledge under question 16. Questions 16c, 16e, and 16f show worse performance for those who said they were not aware of the keyword help screens. Those who said the keyword help screens are very useful to them performed better on questions 16g and 16h. Those who said they are too tightly packed with information performed worse on questions 16f, 16h, and 16i. Those who said the keyword help screens' explanations are not clear performed worse on questions 16a, 16c, and 16i. Those who said the keyword help screens are just right for their purpose performed better on questions 16g and 16h.

Question 24 is about how many of the materials on the last keyword search performed were useful, and three sets of reponses to statements on question 16 showed variation on this. On questions 16d, 16h, and 16i, those who performed better generally retrieved a high proportion of useful responses, but those who said that almost all of the responses were useful did not generally perform the best--those who said most of them were useful performed best.

Question 25 showed significant variation on four statements of keyword knowledge under question 16--16a, 16b, 16e, and 16h. It rates satisfaction with results of the last keyword search. Generally the more satisfied the respondents were, the more likely they were to perform better on these statements. The same group of statements of keyword knowledge showed significant variation for question 26, about comparing keyword searching to a=, t=, and s= searching. Generally, the more positive the attitude toward keyword searching, the better the performance on these statements.

The final question on the survey is question 27, about attributions for failure of keyword searches. Results for question 16c, 16d, and 16g show variation on this item, but patterns are unclear. Indications are that some of the respondents do not realize that they do not know enough·about keyword searching, although those who say that they are not finding the right words for their topics may well be right.

Question 17 for Those Who Have Never Done Keyword Searching

Those who have never done keyword searching were intended to be the only ones answering question 17. They were not to answer the rest of the survey after that, although some of them did.

Reasons for Never Having Done Keyword Searching. Question 17 is about why respondents have never done keyword searching. Eight possible reasons are given, and respondents were asked to check up to two reasons that most apply. The reason that got the most responses was the seventh one, "I wasn't aware of this form of searching at all," implying that these people might do keyword searching in the future, and not that they are opposed to it. (See Table 199.) The second highest response level was reached for the statement "I don't need to; other forms of searching are adequate for me." Response levels dropped off after that. People were least likely to say that keyword searching takes too long to learn, that its response time is too slow, or that there was not staff to assist them.

Table 199 Reasons for Never Having Used Keyword Searching (Responde could check up to two items; percentage is of total number of reas checked, 119.)

It is too difficult to learn.	7(5.9%)
It takes too long to learn.	3(2.5%)
I don't need to; other forms of searching are adequate for me.	34(28.6%)
I don't search very often, so I wouldn't remember how to do it.	12(10.1%)
I haven't been able to go to a library instruction session on it.	12(10.1%)
There hasn't been staff available to assist me.	4(3.4%)
I wasn't aware of this form of searching at all.	44(37%)
Its response time is too slow.	3(2.5%)

Percentages do not always equal 100% due to rounding.

Earlier in the paper, reasons for never having done a keyword search show significant variation with a number of factors. They include length of LUIS experience, previous experience with an OCLC terminal, learning of the availability of keyword searching from a librarian, from a library instruction class/workshop, or from a library announcement, not being aware of the availability of keyword searching at all, being aware of information desk assistance as a keyword searching instruction method, not being aware of any listed keyword searching method, and wanting more descriptive error methods as a keyword searching instruction method. It must be remembered that response levels for different reasons are very low when correlated with other factors, so results should be looked at with skepticism.

When looking at length of experience related to this question, it was found that those with 1-2 years experience were more likely than other groups to say that other forms of searching are adequate, those with 0-1 years experience were more likely than other groups to say they had not been able to go to a library instruction session, and those with 3-5 years experience were more likely than other groups to say they were not aware that keyword searching was available. OCLC users were most likely to say that they did not need to do keyword searching and that other forms of searching are adequate, and that staff had not been available to assist them. They were very unlikely to say they were not aware of keyword searching or that they had not been able to go to a library instruction session on it.

Those who learned of keyword searching availability from a librarian were more likely than other groups to check that keyword searching is too difficult to learn and that they had not been able to get staff assistance--a strange result. They were less likely to check that they had not been able to attend a library instruction session on keyword searching. Those who learned of keyword searching availability from a library instruction class/workshop were more likely than other groups to indicate that keyword searching is too difficult to learn, or takes too long, or that they don't need to learn it, or that they would not search often enough to remember it. They were less likely to indicate that they had not been able to attend library instruction classes on it.

Those who learned of the availability of keyword searching from library announcements were more likely than other groups to say that keyword searching is too difficult to learn and that they have not been able to go to a library instruction session on it. None of them said they were unaware of keyword searching. Those who were previously unaware of the availability of keyword searching were most likely to check this as their reason for not having done it.

Those who were aware of information desk assistance as a form of keyword searching instruction were more likely than the other respondents to say that keyword searching is too difficult to learn and that they have not been able to go to a library instruction session on it. They were less likely to say that they would not search often enough to remember it, and that they were not aware of it. Those who were unaware of any listed keyword searching instruction methods were most likely to say that they were unaware of keyword searching as a reason for not doing it.

Those who checked the option on question 15 of more descriptive error messages as a keyword searching instruction method were more likely than the rest of the respondents to say that keyword searching is too difficult to learn. They were less likely to say that they don't search often enough to remember how to do it, or that they have not been able to go to a library instruction session on it.

It was not meaningful to correlate question 17 results with any later factors on the survey, since they were intended to be answered only by those who had done keyword searching before. Some respondents tried to answer them anyway, but correlations would be nonsensical.

Questions Only for Those Who Have Done Keyword Searching

Questions 18 through 27, the rest of the survey, were intended to be answered only by those who have done keyword searching before, although as mentioned above, some of the respondents who supposedly had not done keyword searching answered them.

Frequency of Keyword Searching on LUIS. Question 18 begins the section of the survey that was aimed only at those who had previously done keyword searching. It asks respondents how often they do keyword searching on LUIS. They were to pick one response from the options "almost every time...," "more than half the times...," "less than half the times...," and "almost never." It is realized, of course, that results are based on user responses which are not necessarily accurate; they only indicate respondents' perceptions. The response which was chosen the most times was almost every time LUIS is used, but this represented less than a third of all the respondents. (See Table 200.) The lowest response level was received for the option of almost never using keyword searching. On the one hand, a substantial portion of these LUIS users claim to use keyword searching for most of their searches, bearing out fears some librarians may have that users who learn it do it automatically, whether or not it is appropriate. On the other hand, this group did not form a majority of the respondents; 70% did not claim to use it almost all the time, although 44% total say they use it almost every time or more than half the times.

Table 200 Frequency of Keyword Searching

Almost Every Time I Use LUIS	121(30.3%)
More Than Half the Times I Use LUIS	55(13.8%)

Less Than Half the Times I Use LUIS	75(18.8%)
Almost Never	45(11.3%)
Unusable Answers	0
Blank	104(26%)

Percentages do not always equal 100% due to rounding.

Frequency of keyword searching has shown significant variation with a number of factors earlier in the survey. Status, age range, previous use of a computer at work, not being aware of keyword searching availability, being aware of keyword help screens and library instruction classes at instructor request, and answers to questions 16d, about the implied "and," 16g, about positional operators, and 16j, about s= searching, all showed significant differences when frequency of keyword searching was correlated.

Frequency of keyword searching drops when one goes from undergraduates to graduate students to faculty. It also drops as age rises. Those who had previous experience with a computer at work tended to use keyword searching less. Those who were not aware of its availability, of course, tended to use it less; in fact, logically, they should not have even answered this question. Those who were aware of keyword help screens and library instruction classes at instructor request as keyword searching instruction methods use keyword searching more frequently. The more frequent the use of keyword searching, the more likely respondents were to get questions 16d, 16g, and 16j correct.

Frequency of keyword searching next shows significant variation with question 19, about how difficult keyword searching was to learn. The more frequent the incidence of keyword searching, the more likely the respondent was to perceive keyword searching as easy to learn. (See Table 201.) Those who use keyword searching almost every time they use LUIS are on the easier "half" of the scale to the level of 93.4%, while those who use it more than half the times they use LUIS fall to 87%. Those who use it less than half the times they use LUIS drop to 77.2%, and those who almost never use it drop more, to 57.5%. Over half of even those who use keyword searching rarely, though, circled a response on the easier "half" of the scale. It is understandable that those who search LUIS more frequently perceive it as easier to learn, since it probably seems so familiar to them that they have trouble remembering what it was like to be a new user. Alternatively, those who use it more frequently may have individual differences that make it easier for them to learn, although there has been no evidence to this effect.

Table 201 Difficulty of Learning Keyword Searching by Frequency of Keyw Searching

	1(Very Easy)	2	3	4(Very Difficult
Almost Every Time...	71(59.2%)	41(34.2%)	7(5.8%)	1(.8%)
More Than Half the Times...	22(40.7%)	25(46.3%)	7(13%)	0
Less Than Half the Times...	20(28.6%)	34(48.6%)	15(21.4%)	1(1.4%)
Almost Never	7(17.5%)	16(40%)	13(32.5%)	4(10%)

Percentages do not always equal 100% due to rounding.

Frequency of keyword searching next shows significant variation, to the .05 level, on an option under question 22, about keyword help screens. One of the statements respondents could check was that keyword help screens "...are very useful to me." The correlation does not show a clear pattern, though--the group that was most likely to check this statement was the "more than half the times I use LUIS" group: 24 of 55, or 43.6%. The group that checked it least was the group that does keyword searching least; the "almost never" group checked it to the extent of 7 of 44, or 15.9%. Those who use keyword searching almost every time they use LUIS checked it to the extent of 40 of 121, or 33.1%, and those who use it less than half the times checked it at the rate of 24 of 74, or 32.4%.

Frequency of keyword searching shows significant variation with all three questions near the end of the survey that attempt to elicit user satisfaction with their keyword searching. Question 24 asks roughly how many of the materials listed in the last keyword search were useful. Perceptions of usefulness generally drop as frequency of use drops. (See Table 202.) Almost 50% of those who use keyword searching almost every time they use LUIS found most or almost all of the results of their last keyword search to be useful. This dropped to about 33 to 35% for those groups who use keyword searching more than half the times they use LUIS and less than half the times they use LUIS. It dropped precipitately to about 17% for those who almost never use keyword searching. Almost 20% of this last group found none of their results useful. Do they use keyword searching less because few of the materials they find are useful, or do they find so few useful materials because they use keyword searching infrequently? Both ideas are probably true to some extent.

Table 202 Usefulness of Materials from Last Keyword Search by Frequency Keyword Searching

	None Useful	Some Useful	Most Useful	Almost All Useful
Almost Every Time...	5(4.2%)	55(46.2%)	51(42.9%)	8(6.7%)
More Than Half the Times...	0	35(63.6%)	18(32.7%)	2(1.8%)
Less Than Half the Times...	4(5.6%)	42(59.2%)	22(31%)	3(4.2%)
Almost Never	8(19.5%)	26(63.4%)	2(4.9%)	5(12.2%)

Percentages do not always equal 100% due to rounding.

Frequency of keyword searching also shows significant variation with question 25, about satisfaction with the results of the last keyword search. Respondents to question 25 rated the results of their last keyword search on a scale of 1 for "very satisfied" to 4 for "very unsatisfied." The results on this correlation are a bit mixed, but those who do keyword searching with any frequency at all are much more satisfied with their results than those who almost never do it. (See Table 203.) The most satisfied group, when looking at the combined percentages that circled "1" or "2," on the satisfied "half" of the scale, was that of respondents who do keyword searching more than half the times they use LUIS--over 80% circled "1" or "2." Those who do keyword searching almost every time they use LUIS and those who do it less than half the times, showed about the same percentage on the satisfied "half" of the scale, about 75%, but those who do keyword searching almost every time had a higher percentage of people circling "1." Those who almost never do keyword searching had only about 42% on the satisfied "half" of the scale.

Table 203 Satisfaction with Results of Last Keyword Search by Frequency Keyword Searching

	1(Very Sat.)	2	3	4(Very Unsat.)
Almost Every Time...	32(27.4%)	57(48.7%)	24(20.5%)	4(3.4%)
More Than Half the Times...	10(18.5%)	63(34%)	9(16.7%)	1(1.9%)
Less Than Half the Times...	10(14.3%)	43(61.4%)	10(14.3%)	7(10%)
Almost Never	4(10%)	13(32.5%)	17(42.5%)	6(15%)

Percentages do not always equal 100% due to rounding.

Question 26 also relates to attitude toward keyword searching, asking respondents to compare keyword searching to a=, t=, and s= searching by checking one of three statements. This question shows significant variation with results of question 18 on frequency of keyword searching. The pattern of results is a bit muddy, but those who use keyword searching almost every time they use LUIS had the highest percentage saying that keyword searching is superior to other forms of searching. (See Table 204.) All the other groups, though, had very few members checking this statement. The group with the highest percentage checking the "moderate" statement, saying that they use keyword searching for topics, but still use a= and t= searching when appropriate, were those who do keyword searching more than half the times they use LUIS. The lowest group for this statement was the group that almost never does keyword searches. The statement that keyword searching is only used as a last resort showed a steady progression in the rate of agreement with it, from frequent keyword searchers to those who almost never do keyword searching. Over 50% of those who use keyword searching less than half the times they use LUIS and over 65% of those who almost never use keyword searching checked this statement.

Table 204 Comparison of Keyword Searching to a=, t=, s= by Frequency Keyword Searching

	K= Superior	K= Best for Subject	K= Last Res
Almost Every Time...	36(31%)	66(56.9%)	14(12.1%)
More Than Half the Times...	4(7.4%)	42(77.8%)	8(14.8%)
Less Than Half the Times...	2(2.8%)	33(45.8%)	37(51.4%)
Almost Never	3(7.3%)	11(26.8%)	27(65.9%)

Percentages do not always equal 100% due to rounding.

Frequency of keyword searching shows significant variation with the final question on the survey, question 27, about attributions for failures at keyword searching. Those who use keyword searching almost every time they use LUIS had a large percentage checking "I'm not finding the right words for my topic" as the most likely reason for their keyword search failures. (See Table 205.) Those who use it more than half the times they use LUIS were also most likely to check this statement. Those who do keyword searching less than half the times they use LUIS were also very likely to check this, but they were more likely than the more frequent keyword searchers to check that they don't know enough about how to do a keyword search, and that LUIS doesn't list material on their topic. Those who almost never do keyword searching said that their topic is too specific and they do not know enough about keyword searching, at much higher rates than the more frequent keyword searchers.

Table 205 Reasons for Failure of Keyword Searches by Frequency of Keyw Searching

	Topic Too Specific	Not Finding Right Words	Don't Know about Keyw.	LUIS Doesn' List Materi
Almost Every Time...	28(24.8%)	70(61.9%)	10(8.8%)	5(4.4%)
More Than Half the Times...	12(24.5%)	31(63.3%)	1(2%)	5(10.2%
Less Than Half the Times...	7(10.9%)	36(56.3%)	11(17.2%)	10(15.6%
Almost Never	11(32.4%)	9(26.5%)	13(38.2%)	1(2.9%)

Percentages do not always equal 100% due to rounding.

Frequency of keyword searching related to significant variations in perceptions of difficulty of learning keyword searching and in feeling that keyword help screens were very useful. The more frequent the use of keyword searching, the greater the perception of ease of keyword searching. Generally, those who perceived keyword help screens as less useful were less frequent keyword searchers. Those who use keyword searching more frequently were more likely to find more of the materials obtained in their last keyword search useful. They are also generally more likely to be satisfied with the results of their last keyword search. They tend to have a more positive attitude toward keyword searching, as opposed to a=, t=, and s= searching. More frequent keyword searchers were likely to attribute failed keyword searches to not finding the right words for their topic; less frequent searchers chose not knowing enough about keyword searching as their reason for failed keyword searches.

Difficulty of Learning Keyword Searching. Question 19 asks respondents how difficult keyword searching was to learn, asking them to rate it on a scale of 1 (very easy) to 4 (very difficult). The choice of "1" received the highest number of responses, and "2" ran a close second. (See Table 206.) About sixty percent of the respondents felt that keyword searching is very easy or easy to learn. Only about 13% circled "3" or "4."

Table 206 Difficulty of Learning Keyword Searching

1(Very Easy)	2	3	4(Very Difficult)
122(30.5%)	117(29.3%)	44(11%)	7(1.8%)

Unusable Answers 1(.3%)
Blank 109(27.3%)
Percentages do not always equal 100% due to rounding.

So far in the survey, difficulty of learning keyword searching has shown significant variation with frequency of LUIS searching, previous lack of experience with any computer systems, previous experience with an OCLC terminal and with a computer at school for a computer course, planning to do a keyword search in the future, answers to question 16b, about phrase searching, question 16i, about truncation, and frequency of keyword searching. Those who search LUIS more frequently, have previous experience with an OCLC terminal and with a computer at school for a computer course, plan to do a keyword search in the future, performed better on questions 16b and 16i, and did keyword searching more frequently tended to perceive keyword searching as more easy to learn. Those who lacked any previous experience with computers perceived it as more difficult to learn.

The next point at which perceptions of difficulty of learning keyword searching show significant variation is on question

20, about how difficult use of Boolean operators was to learn. Those who perceive keyword searching as easier to learn, perceive Boolean operators as easier to learn. (See Table 207.) Over three quarters of those who said keyword searching was very easy to learn (circled "1"), circled "1" or "2" on the scale for ease of learning for Boolean operators. The percentage drops to about 52% for those who circled "2" on the ease-of-learning-keyword-searching scale, and to less than 30% for those who circled "3." Those who circled "4" for very difficult on learning keyword searching, also circled "4" on learning Boolean operators to the extent of 80%.

Table 207 Difficulty of Learning Keyword Searching by Difficulty of Lea ing Boolean Operators

	Difficulty of Learning Boolean Operators			
	1(Very Easy)	2	3	4(Very Difficult)
1(Very Easy)	37(37.4%)	39(39.4%)	16(16.2%)	7(7.1%)
2	10(9.9%)	44(43.6%)	38(37.6%)	9(8.9%)
3	3(9.7%)	6(19.4%)	15(48.4%)	7(22.6%)
4(Very Difficult)	0	1(20%)	0	4(80%)

Percentages do not always equal 100% due to rounding.

The next point at which difficulty of learning keyword searching shows significant variation is on the questions about satisfaction with keyword searching at the end of the survey. Question 24, about how many of the materials from the last keyword search were useful, shows significant differences with question 19. (See Table 208.) The more difficult respondents perceive keyword searching to be to learn, the less likely they are to perceive the materials retrieved from their last keyword search as useful. Fifty percent of those who circled "1" for very easy, on the keyword difficulty scale found most or almost all of the materials from their last keyword search useful. This is as opposed to about 34% of those who circled "2," about 26% of those who circled "3," and about 16% of those who circled "4," for very difficult. This pattern is clear.

Table 208 Usefulness of Materials from Last Keyword Search by Difficulty Learning Keyword Searching

	None Useful	Some Useful	Most Useful	Almost All Useful
1(Very Easy)	3(2.5%)	57(47.5%)	49(40.8%)	11(9.2%)
2	3(2.6%)	74(64.9%)	33(28.9%)	4(3.5%)
3	5(11.9%)	26(61.9%)	10(23.8%)	1(2.4%)
4(Very Difficult)	4(66.7%)	1(16.7%)	0	1(16.7%)

Percentages do not always equal 100% due to rounding.

The perceived difficulty of learning keyword searching also shows significant variation with satisfaction with results of the last keyword search, question 25. The easier the respondent perceived learning keyword searching to be, the more satisfied s/he was with the results of the last keyword search. (See Table 209.) Over 82% of those who said keyword searching was very easy to learn circled "1" or "2," on the more satisfied half of the scale, for the results of the last keyword search. This drops to about 70% for those who circled "2" on question 19, and about 60% for those who circled "3." None of the six people who perceived keyword searching to be very difficult to learn circled "1" or "2" on question 25; they were unsatisfied or very unsatisfied with the results of their last keyword search.

Table 209 Satisfaction with Results of Last Keyword Search by Difficulty Learning Keyword Searching

	1(Very Satisfied)	2	3	4(Very Unsatisfie
1(Very Easy)	42(36.2%)	54(46.6%)	13(11.2%)	7(6%)
2	13(11.5%)	67(59.3%)	29(25.7%)	4(3.5%)
3	1(2.3%)	25(58.1%)	14(32.6%)	3(7%)
4(Very Difficult)	0	0	4(66.7%)	2(33.3%)

Percentages do not always equal 100% due to rounding.

Perceived difficulty of learning keyword searching also shows significant differences when looking at answers to question

26, comparing a=, t=, and s= searching to keyword searching. Positive comparative attitudes toward keyword searching rise as perceived ease of learning keyword searching rises. (See Table 210.) A quarter of those who said keyword searching was very easy to learn said it was superior and they use it most of the time, as compared to about 15% of those who circled "2" on question 19; none of those who circled "3" or "4" checked the most postive statement about keyword searching. The percentages of those who checked the least positive statement about keyword searching, saying they use it only as a last resort, rises steadily as perceptions of keyword searching learning ease drop. A fifth of those who found it very easy to learn checked this statement, rising to a quarter of the "2"'s, over half of the "3"'s, and all of the five who said keyword searching was very difficult to learn.

Table 210 Comparison of a=, t=, s= to Keyword Searching by Difficulty Learning Keyword Searching

	K= Superior	K= Best for Subject	K= Last Resort
1(Very Easy)	29(25.4%)	62(54.4%)	23(20.2%)
2	18(15.7%)	68(59.1%)	29(25.2%)
3	0	19(45.2%)	23(54.8%)
4(Very Difficult)	0	0	5(100%)

Percentages do not always equal 100% due to rounding.

The last question on the survey, question 27, also shows significant variation with perceived difficulty of learning keyword searching. This question is about attributions for failure of keyword searches. Those who thought keyword searching was very easy to learn were most likely to attribute keyword searching failure to not finding the right words for a topic. (See Table 211.) About a fourth of them thought their topics were too specific. The numbers are similar for those who circled

"2" on question 19. Those who circled "3" on question 19, getting into the more difficult half of the scale, were most likely to attribute failure to not knowing enough about keyword searching, although about a third of them checked the item for not finding the right words for their topics. Four of the six people who found keyword searching very difficult to learn checked not finding the right words for their topics, and two of them checked having too specific topics.

Table 211 Reasons for Failure of Keyword Searches by Difficulty of Learn Keyword Searching

	Topic Too Specific	Not Finding Right Words	Don't Know about Keyword	LUIS Doesn't Have Material
1(Very Easy)	29(26.4%)	67(60.9%)	4(3.6%)	10(9.1%)
2	23(21.7%)	62(58.5%)	11(10.4%)	10(9.4%)
3	5(14.7%)	12(35.3%)	16(47.1%)	1(2.9%)
4(Very Difficult)	2(33.3%)	4(66.7%)	0	0

Percentages do not always equal 100% due to rounding.

Those who find keyword searching easy to learn also find Boolean operators to be easy to learn. They are more likely to find more of the materials from the last keyword search useful. They are also more likely to be satisfied with the results of the last keyword search. Those who find keyword searching easy to learn generally have a more positive attitude toward it. They are likely to attribute failure of keyword searches to not finding the right words for topics.

Difficulty of Learning Boolean Operators. On question 20, respondents were asked how difficult the use of Boolean operators was to learn. On this question, it is interesting to note the people who did not answer; over 40% of the respondents left this blank. (See Table 212.) Many of them wrote in comments which indicated they did not know what Boolean operators are, and it is likely that some of the respondents who did answer the question did not know much about Boolean operators. There is a widespread lack of familiarity with Boolean operators. Only about 35% of the answers to question 20 fell on the easier half of the scale, versus about 60% of the answers to question 19, about difficulty of learning keyword searching.

Table 212 Difficulty of Learning Boolean Operators

1(Very Easy)	2	3	4(Very Difficult)
50(12.5%)	90(22.5%)	71(17.8%)	28(7%)

Unusable Answers 0
Blank 161(40.3%)
Percentages do not always equal 100% due to rounding.

Difficulty of learning Boolean operators has related significantly earlier in the paper to status, length of LUIS experience, previous experience with no other computer systems, with CD-ROM databases, with online dial-up databases, with an OCLC terminal, with a computer at home, and with a computer at work, performance on questions 16h and 16i, about field limiting and truncation, respectively, and difficulty of learning of keyword searching.

Faculty were less likely to perceive learning Boolean operators as difficult to learn. Those with a shorter length of LUIS experience tended to perceive Boolean operators as more difficulty to learn. Those with no other computer experience definitely perceived learning Boolean operators as more difficult. Those with CD-ROM database experience perceived it as less difficult, as did those with online dial-up database experience, those with OCLC terminal experience, those with home computer experience, and those with work computer experience. Respondents who performed better on questions 16h and 16i also tended to perceive learning Boolean operators as less difficult, as did those who perceived learning keyword searching as less difficult.

Perceived difficulty of learning Boolean operators does not show much further significant variation on the rest of the survey. The next point at which it does is on question 22, about keyword help screens. The fifth option is to check a statement that says that keyword help screens "...are not very useful to me." Only 26 people who answered question 20 checked this option, so the results are a bit muddy, but 9 of 26, or 34.6%, of those who said that Boolean operators were very difficult to learn checked this statement. What makes things unclear is that the next highest percentage group checking this option is those who said Boolean operators were very easy to learn--7 of 50, or 14%, of them. The lowest percentage--3 of 71, or 4.2%--of those checking the option came from the group that circled "3" on the scale of Boolean operator learning difficulty. Those who circled "2" checked the option at a rate of 7 of 90, or 7.8%. It would be difficult to come to conclusions based on this pattern.

The only other point on which question 20 shows signficant variation is on replies to question 25, a scale measuring satisfaction with the results of the last keyword search. Satisfaction with results of the last keyword search fall as perceptions of difficulty with learning Boolean operators rises. (See Table 213.) Percentages of respondents saying they were very satisfied with the results of their last keyword search drops steadily as their perceived difficulty of learning Boolean operators rises. Over 80% of those who were very satisfied or satisfied with the results of their last keyword search (circled "1" or "2") perceived Boolean operators to be very easy to learn. This combination is at about the same level for those who circled "2" on the Boolean operator scale, but drops to about 76% for those who circled "3" and drops greatly to about 46% for those who felt learning Boolean operators was very difficult.

Table 213 Satisfaction with Results of Last Keyword Search by Difficulty Learning Boolean Operators

	1(Very Satisfied)	2	3	4(Very Unsatisfie
1(Very Easy)	16(34%)	22(46.8%)	7(14.9%)	2(4.3%)
2	21(24.4%)	45(52.3%)	18(20.9%)	2(2.3%)
3	8(11.3%)	46(64.8%)	16(22.5%)	1(1.4%)
4(Very Difficult)	1(3.8%)	11(42.3%)	8(30.8%)	6(23.1%)

Percentages do not always equal 100% due to rounding.

This last correlation is very interesting, although one cannot, of course, conclude that those who know more about Boolean operators are more satisfied with their keyword search results. For one thing, just because respondents perceive Boolean operators as less difficult to learn does not mean they know more about them, although they may think they do. Results on both of these factors may well stem from a general positive attitude and acceptance of keyword searching from a group of respondents.

Methods Used to Learn Keyword Searching. The next question on the survey to be examined is question 21, about what methods were actually used by respondents to learn keyword searching. Ten options were listed, including "other," and people could check all that apply, so each option will be examined separately. The method checked most often was the LUIS welcome screen, and the second highest was trial and error. (See Table 214.) Third were the keyword help screens. A fairly distant fourth was a library instruction class/workshop. The bulk of respondents use minimal information to learn keyword searching on their own--all the LUIS welcome screen tells them is that to do a keyword search, one types in k= (a keyword) and presses the enter key, although a goodly number of them may actually use the keyword help screens, which have much more information. Most people are evidently not reached by more organized library instruction methods and/or do not want to use them. As demonstrated earlier in the paper, awareness of many of these methods was fairly widespread, but being aware of an instruction method does not mean it was actually used.

Table 214 Methods Used to Learn Keyword Searching

LUIS Welcome Screen	169(42.5%)
LUIS Keyword Help Screens	127(31.8%)
Trial and Error	166(41.5%)
Library Instruction Class/Workshop	108(27%)
Information Desk Librarian Assistance	34(8.5%)
Assistance from Passing Library Staff Member	22(5.5%)
Friend or Someone at Next Terminal	52(13%)
Appointment with Librarian	2(.5%)
Library Handouts	60(15%)

The first option is learning to do keyword searching from the LUIS Welcome screen, and this was the most popular option. This factor has correlated significantly earlier in the survey with learning of the availability of keyword searching from a library instruction class/workshop or from the LUIS Welcome screen, and being aware of keyword help screens or library instruction classes at instructor request as keyword searching instruction methods. Those who learned of keyword searching availability from a library instruction class/workshop were less likely to have used the LUIS Welcome screen as a way of learning about keyword searching, whereas, of course, those who learned of keyword searching availability from the LUIS Welcome screen were more likely to have used it to learn keyword searching. Those who were aware of the keyword help screens as a keyword searching instruction method were more likely to have used the LUIS Welcome screen as a keyword searching instruction method, whereas those who were aware of library instruction classes at instructor request as a keyword searching instruction method were less likely to have used the LUIS Welcome screen to learn keyword searching.

Using the LUIS Welcome screen to learn to do keyword searching shows significant variation with three other options under this same question, showing what instruction methods tended to be used by the same group of people. The second option, LUIS keyword help screens, showed significant variation with using the LUIS Welcome screen to learn keyword searching. It is hardly surprising that twice as high a percentage of the group that checked the LUIS Welcome screen as an instruction method also checked the second instruction option, the keyword help screens, as for those that did not use the LUIS Welcome screen to learn keyword searching. Ninety-two of 169, or 54.4%, of those who used the LUIS Welcome screen to learn keyword searching also used keyword help screens, as opposed to 35 of 131, or 26.7%, of those who did not check the LUIS Welcome screen as an instruction method.

The group in question was also significantly more likely to say that they used trial and error to learn keyword searching than were those who did not check using the LUIS Welcome screen as an instruction method. Of 169 people who checked using the LUIS Welcome screen, 108, or 63.9%, of them also used trial and error. This is as opposed to 58 of 131, or 44.3%, of those who did not check the option of the LUIS Welcome screen.

The fourth option under question 21 is using a library instruction class/workshop, and this also shows significant variation with checking the LUIS Welcome screen as a method of learning keyword searching. In this case, the variation is in the other direction, with those who checked the LUIS Welcome screen less likely to check having used a library instruction class/workshop as a method used to learn keyword searching: 42 of 169, or 24.9%, of them, versus 66 of 131, or 50.4%, of the rest of the respondents. The group that checked learning keyword searching from the LUIS Welcome screen learned keyword searching at the terminal on their own. These variations with other options for learning keyword searching were the only ones for the first learning option.

The second option under question 21 is using the LUIS keyword help screens to learn keyword searching; 127 people checked this, making it the third most popular option. Earlier in the paper it has shown significant variation with status, length of LUIS experience, previous use of a computer at home and a computer at work, learning of the availability of keyword searching from the LUIS Welcome screen, being aware of keyword help screens and on-demand instruction appointments with librarians as keyword searching instruction methods, not being aware of any listed keyword searching instruction methods, answers to questions 16c, 16h, and 16i, about how to get to the keyword help screens, field limiting, and truncation, respectively, and with using the LUIS

Welcome screen to learn keyword searching.

Faculty were more likely to have used keyword help screens to learn keyword searching, as were those who had longer experience with LUIS, those who had previous experience with a computer at home or at work, those who learned of the availability of keyword searching from the LUIS Welcome screen, and those who were aware of keyword help screens and on-demand appointments with librarians as keyword searching instruction methods. Those who performed better on questions 16c, 16h, and 16i were more likely to have used keyword help screens to learn keyword searching, as were those who used the LUIS Welcome screen to learn keyword searching.

In addition to the above significant variations, learning to do keyword searching using the keyword help screens also correlated significantly with learning it using trial and error. A higher percentage of those who learned keyword searching using keyword help screens used trial and error to learn it, than did the group that did not check using keyword help screens--92 of 127, or 72.4%, of those who used keyword help screens to learn keyword searching also used trial and error, as opposed to 74 of 173, or 42.8%, of those who did not indicate using keyword help screens.

Use of keyword help screens to learn keyword searching, not surprisingly, showed significant variation with several items under question 22, about the keyword help screens. Four statements under question 22 shows significant differences when correlated with the learning method in question, three of them significant to .05 and one significant to .01. The first option is to check that "I was not aware of [the keyword help screens.]" Interestingly enough, and another indicator of how well some people read these surveys, nine of 127 people, or 7.1%, who said they used keyword help screens to learn keyword searching also said they were not aware of them. Forty-five of 173, or 26%, who did not check using the keyword help screens to learn keyword searching, said they were not aware of them.

The second statement about the keyword help screens, "I refer to them only occasionally," also showed significant variation with using keyword help screens to learn keyword searching, but only to the .05 level. More of those who used keyword help screens to learn keyword searching checked this statement than did those who did not use keyword help screens--logical since they presumably used the keyword screens more, to even have a chance to comment on them. It is only surprising that there were not more such variations on question 22. Fifty-six of 127, or 44.1%, of those who used keyword help screens to learn keyword searching said they refer to them only occasionally, versus 52 of 173, or 30.1%, of the rest of the respondents. This group may have used keyword help screens to learn keyword searching initially, but did not feel the need to refer back to them much.

The third option under question 22 is that the keyword help screens "...are very useful to me." This also showed significant variation to the .05 level with using the keyword help screens to learn keyword searching. One would expect those who actually used the keyword help screens to learn keyword searching to be more likely to find them very useful, and this is so: 50 of 127, or 39.4%, of those who used keyword help screens to learn keyword searching found the screens very useful, versus 47 of 173, or 27.2%, of those who did not check that they used them.

The fourth option under question 22 is that the keyword help screens "...are somewhat useful to me." Again, there is variation significant to .05 with having used keyword help screens to learn keyword searching. The percentages are lower for finding keyword help screens somewhat useful, as opposed to very useful, but those who used them to learn keyword searching were still more likely to check this statement than were those who did not use them. Thirty-six of 127, or 28.3%, of those who used keyword help screens to learn keyword searching found them somewhat useful, versus 28 of 173, or 16.2%, of those who did not indicate that they used keyword help screens. This was the final significant variation for learning to do keyword searching from keyword help screens.

The third option under question 21, about methods used to learn keyword searching, is trial and error, and this is the second more popular option, chosen by 166 people. Earlier in the survey, it has shown significant variation with previous use of no other computer systems, previous use of CD-ROM databases and online dial-up databases, learning of the availability of keyword searching from the LUIS Welcome screen, being aware of library handouts/announcements, library instruction classes at instructor request, and information desk assistance as keyword searching instruction methods, and learning to do keyword searches from the LUIS Welcome screen and the keyword help screens.

Those who had no other computer experience were less likely to have checked using trial and error to learn keyword searching, while those with CD-ROM database experience or online dial-up database experience were more likely to have used it. Those who learned of the availability of keyword searching from the LUIS Welcome screen were more likely to have checked using trial and error to learn keyword searching. Those who were aware of library handouts/announcements, library instruction classes at instructor request, or information desk assistance as keyword searching instruction methods were more likely to have used trial and error to learn keyword searching. Those who learned to do keyword searching using LUIS Welcome screens or keyword help screens were more likely to have used trial and error, too.

Learning to do keyword searching using trial and error correlated significantly, to the .05 level, with two other variables on the survey. Question 24 asks respondents about how many of the results of their last keyword search were useful to them. Those who used trial and error to learn keyword searching were more likely to perceive most or almost all of the results of the last keyword search as useful than were those who did not check using trial and error. (See Table 215.) Over 42% of them judged the results of their last keyword search more favorably, versus over 33% of the rest of the respondents. Over 10% of those who did not check using trial and error said none of their materials were useful, versus only about 3% of those who did use trial and error.

Table 215 Amount of Useful Material from Last Keyword Search by Learn Keyword Searching Using Trial and Error

	None Useful	Some Useful	Most Useful	Almost All Useful

Trial and Error	4(2.5%)	89(54.9%)	57(35.2%)	12(7.4%)
Didn't Check Option	13(10.1%)	73(56.6%)	37(28.7%)	6(4.7%)

Percentages do not always equal 100% due to rounding.

The other item with which learning keyword searching by trial and error correlated significantly, again to .05, is question 25, about how satisfied the respondent was with the last keyword search results. Those who used trial and error to learn keyword searching were somewhat more likely to be more satisfied with the results of their last keyword search. (See Table 216.) Only about 3% of them were very unsatisfied with their results, versus about 10% of the rest of the respondents. Over 76% of the respondents who used trial and error circled "1" or "2," on the more satisfied half of the scale, versus over 65% of the respondents who did not check using trial and error. It is difficult to explain these two variations.

Table 216 Satisfaction with Results of Last Keyword Search by Learn Keyword Searching Using Trial and Error

	1(Very Satisfied)	2	3	4(Very Unsatisfie
Trial and Error	31(19.1%)	93(57.4%)	33(20.4%)	5(3.1%)
Didn't Check Option	26(21.1%)	55(44.7%)	29(23.6%)	13(10.6%)

Percentages do not always equal 100% due to rounding.

The fourth option on question 21 is learning keyword searching from a library instruction class/workshop, checked by 108 people, making it the fourth most popular option. So far in the survey, this option has shown significant variation with subject area, age range, frequency of LUIS searching, learning of the availability of keyword searching from a library instruction class/workshop or from the LUIS Welcome screen, being aware of library handouts/announcements, library instruction classes at instructor request, and information desk assistance as keyword searching instruction methods, not being aware of any listed keyword searching instruction methods, answers to questions 16d, 16e, 16g, 16h, and 16i, about the implied "and," Boolean operators, positional operators, field limiting, and truncation, and using the LUIS Welcome screen to learn keyword searching.

HPER, business, and science people were more likely to use library instruction classes/workshops to learn keyword searching, as were those who were in the younger age ranges. Those who use LUIS more frequently are less likely to have used library instruction to learn keyword. Those who learned of the availability of keyword searching from a library instruction class/workshop were more likely to have used such a class to learn keyword searching, while those who learned of the availability of keyword searching from the LUIS Welcome screen were less likely to have used a library instruction class/workshop to learn keyword searching. Those who were aware of library handouts/announcements, library instruction classes at instructor request, and information desk assistance were more likely to use a library instruction class/workshop to learn keyword searching. Those who were unaware of any listed instruction methods for keyword searching were less likely to have used a library instruction class/workshop to learn it, of course. Those who had used a library instruction class/workshop to learn keyword searching performed better on questions 16d, 16e, 16g, 16h, and 16i. Those who learned keyword searching from the LUIS Welcome screen also used library instruction classes/workshops to learn keyword searching.

The only other item with which learning keyword searching from a library instruction class/workshop shows significant variation is the option of learning to do keyword searching from library handouts. Those who learned from a library instruction class/workshop were more likely than the rest of the respondents to also use library handouts to learn keyword searching. Thirty-six of 108, or 33.3%, of those who learned from a library instruction class/workshop also learned from library handouts, versus 24 of 192, or 12.5%, of the respondents who did not check learning from a library instruction class/workshop.

The fifth option for learning keyword searching is information desk librarian assistance. This option was chosen by only 34 people, making it the seventh most popular method. The small number of respondents mean that correlations are not very meaningful, but, for what it is worth, this factor has shown some variations earlier in the paper. Frequency of LUIS searching, learning of the availability of keyword searching from a librarian, being aware of information desk assistance as a keyword searching instruction method--all have shown significant variation with using information desk librarian assistance to learn keyword searching.

Those who used information desk librarian assistance to learn keyword searching tended to be less frequent LUIS searchers. As one might expect, those who learned of the availability of keyword searching from a librarian, and those who were aware of information desk assistance as a keyword searching instruction method, were more likely to use information desk librarian assistance to learn keyword searching.

Using information desk librarian assistance shows significant variation, to the .05 level, with two statements under question 22, about keyword help screens. The first statement says "I was not aware of [keyword help screens]" and this shows significant difference on the factor in question. Even though response numbers for this option are small, it is rather striking that only 1 of 34, or 2.9%, of those who used information desk librarian assistance to learn keyword searching were not aware of the keyword help screens. This is as opposed to 53 of 266, or 19.9%, of those who did not check using information desk librarian assistance. Perhaps information desk librarians are successful at conveying to patrons where to find more information about keyword searching.

The fourth statement under question 22 says the keyword help screens "...are somewhat useful to me." This also shows significant variation to .05 with using information desk librarian assistance to learn keyword searching. Twelve of 34, or 35.3%, of the group in question checked this statement, versus 52 of 266, or 19.5%, of the rest of the respondents. It is difficult to tell if this means anything or not.

The final item on which learning keyword searching from information desk librarian assistance shows significant variation, again to .05, is question 25, about satisfaction with results of the last keyword search. The results are mixed: a noticeably higher percentage of those who used information desk librarian assistance to learn keyword searching circled "1" for very satisfied than did those who did not check that learning method. (See Table 217.) On the other hand, a slightly higher percentage of those who did not check using this learning method circled either "1" or "2" on the satisfied half of the scale than did those who checked using information desk librarian assistance. These results are too muddy to be meaningful, especially since only 32 of those who checked this learning method gave usable responses to question 25.

Table 217 Satisfaction with Results of Last Keyword Search by Using Inf mation Desk Librarian Assistance to Learn Keyword Searching

	1(Very Satisfied)	2	3	4(Very Unsatisfie
Info. Desk Libr. Ass.	12(37.5%)	10(31.3%)	7(21.9%)	3(9.4%)
Didn't Check Option	45(17.8%)	138(54.5%)	55(21.7%)	15(5.9%)

Percentages do not always equal 100% due to rounding.

The sixth option under question 21 is learning keyword searching with assistance from a passing library staff member. Only 22 people checked this option, making it the eighth most popular choice, and, of course, rendering correlations dubious. It has shown significant variation, however, with previous experience with a computer at school for a non-computer course, learning of keyword searching availability from a librarian, and answers to question 16g, about positional operators.

Those who had used a school computer for a non-computer course were more likely than the rest of the respondents to check using this keyword searching learning method, as were those who learned of keyword searching availability from a librarian. Those who learned keyword searching from a passing library staff member performed worse on question 16g than those who did not check that option.

Learning keyword searching from a passing library staff member showed significant variation with two statements under question 22, about keyword help screens. The seventh statement says "there are too many [keyword help screens]." Three of 22, or 13.6%, of those who used the learning method in question checked this statement, versus 7 of 278, or 2.5%, of those who did not check using that learning method. The numbers are small, but that is a fairly large proportion of the group in question.

The tenth statement under question 22 is that the keyword help screens "...are just right for their purpose." This also shows significant variation with using a passing library staff member to learn keyword searching. A noticeably higher percentage of those who used this learning method checked this statement than did those who did not say they had used the method--8 of 22, or 36.4%, versus 38 of 278, or 13.7%, of the rest of the respondents.

Learning keyword searching with assistance from a passing library staff member shows significant variation with the estimated useful amount of materials from the last keyword search. Those who used this method were more likely to feel that more of the materials from their last keyword search were useful. (See Table 218.) Almost 60% of those who learned keyword searching with assistance from a passing library staff member said that most or almost all of the materials from their last keyword search were useful, versus about 37% of those who did not check this learning method.

Table 218 Amount of Useful Material from Last Keyword Search by Learn Keyword Searching Using Assistance from a Passing Library Staff Member

	None Useful	Some Useful	Most Useful	Almost All Useful
Passing Libr. Staff	1(4.5%)	8(36.4%)	8(36.4%)	5(22.7%)
Didn't Check Option	16(5.9%)	154(57.2%)	86(32%)	13(4.8%)

Percentages do not always equal 100% due to rounding.

The final item on which assistance from a passing library staff member to learn keyword searching makes a significant difference, to the .05 level, is question 25, about how satisfied the respondent was with the results of the last keyword search. The results of this correlation are a bit mixed. (See Table 219.) A much higher percentage of the group that used assistance from a passing library staff member was very satisfied with the results of their last keyword search, than were the rest of the respondents. On the other hand, over 72% of the rest of the respondents circled "1" or "2," on the satisfied half of the scale, versus about 63% of those who used the learning method in question. About the same percentage of each group said they were very unsatisfied.

Table 219 Satisfaction with Results of Last Keyword Search by Learn Keyword Searching Using Assistance from a Passing Library Staff Member

	1(Very Satisfied)	2	3	4(Very Unsatisfie
Info. Desk Lib. Ass.	9(40.9%)	5(22.7%)	7(31.8%)	1(4.5%)
Didn't Check Option	48(18.3%)	143(54.4%)	55(20.9%)	17(6.5%)

Percentages do not always equal 100% due to rounding.

The seventh option under question 21 is learning keyword searching from a friend or someone at the next terminal, and 52 people checked this--almost as much as information desk librarian assistance and assistance from a passing library staff member added together. It is the sixth most popular option. It has earlier shown significant variation with age range, previous experience with CD-ROM databases, learning of the availability of keyword searching from a friend, professor, or person at the next terminal, being aware of information desk assistance as a keyword searching instruction method, and answers to question 16i, about truncation.

Those who were in older age ranges were less likely to check learning keyword searching from a friend or someone at the next terminal, as were those who had previous experience with CD-ROM databases. Those who learned of the availability of keyword searching from a friend, professor, or person at the next terminal were, of course, more likely to have learned to do keyword searching from a friend or someone at the next terminal. Those who were aware of information desk assistance as a keyword searching instruction method were more likely to have learned to do keyword searching from a friend or someone at the next terminal. Those who learned in this way were likely to perform worse on question 16i than the rest of the respondents. This option showed significant variation with no other factors later on the survey.

The eighth option under question 21 is learning keyword searching through an appointment with a librarian, and only two people checked this, making it the least popular option. It is obviously not meaningful to correlate an item with only two respondents, so nothing further can be said about this option.

The ninth option under question 21 is learning keyword searching from library handouts, and this option was chosen by 60 people, making it the fifth most popular choice. Earlier in the survey, it has shown significant variation with learning of keyword searching availability from a library instruction class/workshop and from a library announcement, being aware of library handouts/announcements, library workshops held once per semester, and library instruction classes at instructor request as keyword searching instruction methods, not being aware of any listed keyword searching instruction method, answers to questions

16b and 16d, about phrase searching and the implied "and," and using library instruction classes/workshops to learn keyword searching.

Those who learned of keyword searching availability from a library instruction class/workshop or from a library announcement were more likely than the rest of the respondents to have used library handouts to learn keyword searching. This is also true of those who were aware of library handouts/announcements, library workshops held once per semester, and library instruction classes at instructor request as keyword searching instruction methods. Of course, those who were not aware of any listed instruction methods were less likely to have used library handouts to learn keyword searching. Those who used library handouts to learn keyword searching performed better than the rest of the respondents on questions 16b and 16d. Those who learned keyword searching in library instruction classes/workshops were likely to have also used library handouts to learn it. This method of learning showed no further significant variation in the rest of the survey.

To summarize, methods of learning keyword searching that were fairly independent of librarians were by far the most likely to be used. The three most popular methods, the LUIS Welcome screen, the keyword help screens, and trial and error, can be used without anyone's help, anytime one is at the terminal. The most popular library-assisted method of learning keyword searching was library instruction classes/workshops, which had reached over a quarter of the respondents. Obtaining assistance from library staff to learn keyword searching was done by only about 15% of the respondents.

There is some indication that the method of learning keyword searching used affects patrons' perceptions of the quality of keyword searching. Those who used trial and error, those who used information desk librarian assistance, and those who received assistance from a passing library staff member, were more likely to indicate more satisfaction with the results of their last keyword search, and/or say that more of the materials retrieved were useful.

Keyword Help Screens. Question 22 attempts to elicit opinions about the keyword help screens. A series of keyword help screens obtained by typing in "k" and pressing enter are really the basic documentation for keyword searching. They cover basics of keyword searching, field limiting, positional operators, logical operators, truncation, nesting, and stopwords, and provide search samples. They are easily available anytime one is at the terminal. Respondents were given a range of ten statements expressing different opinions, and were told to check as many as they agreed with. Results follow in Table 220.

Table 220 Opinions about Keyword Help Screens

I was not aware of them.	54(13.5%)
I refer to them only occasionally.	108(27%)
They are very useful to me.	97(24.3%)
They are somewhat useful to me.	64(16%)
They are not very useful to me.	33(8.3%)
They are too tightly packed with information.	10(2.5%)
There are too many of them.	10(2.5%)
They don't have enough examples.	17(4.3%)
Their explanations are not clear.	34(8.5%)
They are just right for their purpose.	46(11.5%)

Overall, the attitudes toward the keyword help screens are fairly positive. Comparatively few people said they were not aware of them, although it is doubtful if this completely reflects reality. The greatest level of agreement was obtained for the ideas that they refer to the keyword help screens only occasionally, and that they are very useful--almost a quarter of the respondents said this. About 40% of the respondents felt the keyword help screens were very or somewhat useful to them. Less than 10% said they were not very useful. None of the more negative statements received even 10% agreement. A little over 10% went so far as to say that the keyword help screens were just right for their purpose.

The first statement was that the respondent was not aware of keyword help screens, the fourth most likely item to be checked. Earlier in the survey, it has shown significant variation with answers to questions 16c, 16e, and 16f, about how one gets to keyword help screens, Boolean operators, and stopwords, and with learning keyword searching from keyword help screens and with information desk librarian assistance.

Those who were not aware of keyword help screens performed worse than the rest of the respondents on questions 16c, 16e, and 16f. Since Boolean operators and stopwords are prominently emphasized on the keyword help screens, perhaps people really are absorbing that information from them. It did not make a difference, though, in other areas that are emphasized, like positional operators and truncation. Those who learned keyword searching from keyword help screens, of course, and those who learned with information desk librarian assistance were less likely to be unaware of the keyword help screens. Information desk librarians apparently tend to tell patrons about the keyword help screens, to give them a further source of information--a desirable strategy, of course.

When looking at other statements about keyword searching and responses to them, it is no surprise that those who say they were unaware of the screens show significant differences on some of the other responses to question 22. The second statement, "I refer to them only occasionally," shows significant variation with lack of awareness of the screens. Those who say they were unaware of the keyword help screens checked referring to them occasionally to the rate of 5 of 54, or 9.3%, and, in fact, it is surprising that that many of them checked it. For the rest of the respondents, the rate is 103 or 246, or 41.9%.

The third statement under question 22 is that the keyword help screens "...are very useful to me." Again, hardly surprisingly, those who were not aware of the keyword help screens showed significant variation on checking this option. Actually, more of those who were supposedly unaware of the screens checked this statement than checked the last one, about referring to them occasionally! Seven of 54, or 13%, of those who were unaware of the keyword help screens said they find the screens very helpful. This is as opposed to 90 of 246, or 36.6%, of the respondents who did not check being unaware of the keyword help screens.

The fourth statement under question 22 is that the keyword help screens "...are somewhat useful to me." Those who were unaware of the keyword help screens also showed significant variation on this option. Only one of 54, or 1.9%, of those who were reportedly unaware of the keyword screens, checked that they were somewhat useful. For those who did not check being unaware of the keyword help screens, 63 of 246, or 25.6%, said they were somewhat useful.

The final factor on which those who said they were unaware of the keyword help screens show significant variation, to .05, is question 24, about how much of the results of the last keyword search were useful. Those who were unaware of the keyword help screens were likely to find fewer of the materials retrieved on their last keyword search useful. (See Table 221.) Three times as high a percentage of those who were unaware of the keyword help screens said none of the materials were useful, compared to the rest of the respondents. Only 28% of those who were unaware of the keyword help screens said that most or almost all of the materials from their last keyword search were useful, as opposed to over 40% of those who were presumably aware of keyword help screens. Do those who are unaware of the keyword help screens generally have a less positive attitude toward it because they know less about it, or does their ignorance of keyword searching actually lead to them doing poorer searches and getting less useful material?

The second statement under question 22 about the keyword help screens is "I refer to them only occasionally." This was the most checked option, with 108 respondents choosing it. Earlier in the paper, it has shown significant variation with planning to do a keyword search in the future, using LUIS keyword help screens, or information desk librarian assistance to learn keyword searching, and being unaware of keyword help screens.

Those who said they did not know if they would do a keyword search in the future were more likely to say they refer to the keyword help screens only occasionally. This is also true of those who used LUIS keyword help screens or information desk librarian assistance to learn keyword searching. Those who were unaware of keyword help screens were less likely to check this statement.

Saying that the keyword help screens are only referred to occasionally varies significantly with checking the next statement on question 22, "they are very useful to me." Those who only refer to the keyword help screens occasionally are much less likely to have checked that they are very useful--21 of 108, or 19.4%, of the group in question, versus 76 of 192, or 39.6%, of those who did not check that they refer to the keyword help screens only occasionally.

The only other factor with which referring to the keyword help screens only occasionally shows significant variation, to the .05 level, is question 26, comparing keyword searching with a=, t=, and s= searching. Those who said they use keyword help screens only occasionally were less than half as likely as the rest of the respondents to consider keyword searching superior to the other methods. (See Table 222.) They were somewhat more likely to consider it a last resort as a searching method. There is at least a tendency for those who refer to keyword help screens occasionally to have a less positive attitude toward keyword searching, but it is not possible to tell if they refer to the screens only occasionally because they have a less positive attitude toward keyword searching, or if they have a less positive attitude because they only refer to the screens occasionally.

Table 222 Comparing K= Searching to A=, T=, S= Searching by Referring Keyword Help Screens Only Occasionally

	Keyword Superior	Keyword Best for Topic	Keyword Last Resort
K= Help Screens Used Occ.	10(9.6%)	57(54.8%)	37(35.6%)
Didn't Check Option	37(20.3%)	96(52.7%)	49(26.9%)

Percentages do not always equal 100% due to rounding.

The third statement under question 22 is that the keyword help screens "...are very useful to me." Ninety-seven people checked this, making it the second most popular option. Earlier in the paper, this statement has shown significant variation with age range, previous experience with CD-ROM databases, answers to questions 16g and 16h, about positional operators and field limiting, respectively, frequency of keyword searching, using LUIS keyword help screens to learn keyword searching, not being aware of keyword help screens, and referring to keyword help screens only occasionally.

Those who are 23-30 years old checked this statement most often of the studied age ranges, and 31-40 year olds came next. Those with previous CD-ROM database experience were less likely to check this statement. Those who found the keyword help screens to be very useful were more likely to perform better on questions 16g and 16h. Those who do keyword searching more than half the times they search LUIS were most likely of the different frequency groups to check this statement, and those who almost never use keyword searching were the least likely. Those who used LUIS keyword help screens to learn keyword searching were more likely to find them very useful. Those who were unaware of keyword help screens, or refer to them only occasionally were less likely to find them very useful.

Finding the keyword help screens very useful varies significantly with the fourth statement under question 22, "they are somewhat useful to me." Hardly surprisingly, those who checked the "very useful" characterization were less likely than the rest of the respondents to check that the keyword help screens were somewhat useful--7 of 97, or 7.2%, versus 57 of 203, or 28.1%. Seven people, though, found the screens very useful and somewhat useful.

Choice of the fifth statement under question 22, "they are not very useful to me," also varied significantly with saying the keyword help screens are very useful--again, not surprisingly. It is only surprising that one person actually checked both statements--1 of 97, or 1%. For those who did not say the keyword help screens were very useful, 32 of 203, or 15.8%, of them said they were not very useful.

The tenth statement under question 22 says the keyword help screens "...are just right for their purpose." This also showed significant variation with checking the statement that they are very useful. Those who found them very useful were more likely than the rest of the respondents to check that the screens are just right for their purpose. Twenty-eight of 97, or 28.9%, of those who said the keyword help screens were very useful also said they were just right for their purpose, versus 18 of 203, or 8.9%, of the rest of the respondents.

The next point at which significant variation appears for finding the keyword help screens very useful is question 25, about how satisfied the respondent was with the results of the last keyword search. Those who found the keyword help screens very useful were much more likely to be generally satisfied with the results of their last keyword search. (See Table 223.) A third of those who found the keyword help screens very useful were very satisfied with the results of the last keyword search, versus less than 15% of the other respondents. Almost 84% of those who found the screens very useful circled either "1" or "2," on the satisfied half of the scale. This is as opposed to about 66% of those who did not check finding the screens very useful. None of those who found the screens very useful were very unsatisfied with the results of the last keyword search, as opposed to almost 10% of those who did not check the statement in question.

Table 223 Satisfaction with Results of Last Keyword Search by Find Keyword Help Screens Very Useful

	1(Very Satisfied)	2	3	4(Very Unsatisfi
K= Hlp Scr. Very Use.	31(33.3%)	47(50.5%)	15(16.1%)	0
Didn't Check Option	26(13.5%)	101(52.6%)	47(24.5%)	18(9.4%)

Percentages do not always equal 100% due to rounding.

The final item with which finding the keyword help screens very useful shows significant variation, to the .05 level, is question 26, about comparing keyword searching to a=, t=, and s= searching. Those who find the keyword help screens very useful generally had a more positive attitude toward keyword searching. (See Table 224.) Over 20% of the group in question feel keyword searching is superior to the other forms, versus less than 15% of the rest of the respondents. Less than 19% of those who found the keyword help screens very useful said they only use keyword searching as a last resort, versus over 35% of the rest of the respondents. For this and the last correlation, do those who find the keyword help screens very useful have a generally more positive attitude toward keyword searching and answer these evaluative questions more positively, or do the keyword help screens really help them learn more and so regard keyword searching more positively? They only performed better on two keyword knowledge statements, so it is difficult to say what is more likely.

Table 224 Comparing Keyword Searching to A=, T=, and S= Searching by Fi ing Keyword Help Screens Very Useful

	Keyword Superior	Keyword Best for Topic	Keyword Last Resort
K= Hlp Scrns Very Use.	19(20.9%)	55(60.4%)	17(18.7%)
Didn't Check Option	28(14.4%)	98(50.3%)	69(35.4%)

Percentages do not always equal 100% due to rounding.

The fourth statement under question 22 says that the keyword help screens "...are somewhat useful to me." This was checked by 64 respondents, making it the third most popular option. Earlier in the paper, it has shown significant variation with previous use of another library's computerized catalog, using LUIS keyword help screens or information desk librarian assistance to learn keyword searching, not being aware of the keyword help screens, and finding the keyword help screens very useful.

Those who had previous experience with another library's computerized catalog were much less likely to check this statement than other respondents were. Those who used keyword help screens to learn keyword searching were more likely to check it, as were those who had used information desk librarian assistance to learn keyword searching. Those who were not aware of the keyword help screens, or who found them very useful, were not as likely as the rest of the respondents to check this item.

Checking this statement shows significant variation with two other statements on question 22, following it on the survey. The fifth statement is "they are not very useful to me," and it is not surprising that those who checked that the keyword help screens are somewhat useful to them would show significant variation on this. None of those who found keyword help screens somewhat useful also said they are not very useful, as opposed to 33 of 236, or 14%, of the rest of the respondents.

The sixth statement says the keyword help screens "...are too tightly packed with information." This also shows significant variation with finding them somewhat useful. Those who find keyword help screens somewhat useful were much more likely than the rest of the respondents to find them too tightly packed with information--7 of 64, or 10.9%, versus 3 of 236, or 1.3%. This is still only about a tenth of them, but this factor evidently contributed to not finding the screens as useful as they could be. These were the only two further factors varying significantly with the factor in question.

The fifth statement under question 22 is that the keyword help screens "...are not very useful to me." This was checked by only 33 respondents, making it the seventh most popular option. Earlier in the paper, it has shown significant variation with difficulty with learning Boolean operators, finding the keyword help screens very useful, and finding them somewhat useful.

Those who find Boolean operators very difficult to learn were more likely than the rest of the respondents to check that the keyword help screens are not very useful. Those who find the keyword help screens very useful or somewhat useful were unlikely to check that they are not very useful.

This statement shows further significant variation, to the .05 level, with two more statements under question 22. The eighth statement is "they don't have enough examples." Those who find the keyword help screens not very useful were more than three times as likely as the rest of the respondents to check this--5 of 33, or 15.2%, versus 12 of 267, or 4.5%. This would seem to be a contributing reason for some of the respondents not finding the screens very useful.

The ninth statement under question 22 is keyword help screens' "...explanations are not clear," and this also shows significant variation to .05 with finding the keyword help screens not very useful. The group in question was more than twice as likely as the rest of the respondents to find the screen explanations not clear--8 of 33, or 24.2%, versus 26 of 267, or 9.7%. This would appear to be an even stronger explanation for finding the screens not very useful.

The last significant variation with finding the keyword help screens not very useful comes with question 25, about satisfaction with results of the last keyword search. Those who find keyword help screens not very useful definitely show less satisfaction with the results of their last keyword search. (See Table 225.) Less than 10% of the group in question were very satisfied, versus over 20% of the rest of the respondents. Almost 20% of the group in question were very unsatisfied with their results, versus under 5% of the rest of the respondents.

About half of those who found keyword help screens not very useful circled "3" or "4," on the unsatisfied half of the scale. Only about a quarter of the rest of the respondents chose those options.

Table 225 Satisfaction with Results of Last Keyword Search by Find Keyword Help Screens Not Very Useful

	1(Very Satisfied)	2	3	4(Very Unsatisfie
Scrns Not Very Usef.	3(9.4%)	13(40.6%)	10(31.3%)	6(18.8%)
Didn't Check Option	54(21.3%)	135(53.4%)	52(20.6%)	12(4.7%)

Percentages do not always equal 100% due to rounding.

The sixth statement under question 22, about the keyword help screens, is "they are too tightly packed with information." Only ten people checked this, tying it for least popular statement. Obviously, significant variations are not that meaningful, but so far, it has shown them with answers to questions 16f, 16h, and 16i, about stopwords, field limiting, and truncation, respectively, and finding the keyword help screens somewhat useful.

Those who felt the keyword help screens are too tightly packed with information performed worse on questions 16f, 16h, and 16i. Those who find the keyword help screens somewhat useful are more likely than the rest of the respondents to find them too tightly packed with information.

Checking that the keyword help screens are too tightly packed with information also shows significant variation with three of the last four statements under question 22. The seventh statement, "there are too many of them," shows significant variation with this option. Three of ten, or 30%, of those who find the keyword help screens too tightly packed with information also feel that there are too many of them, versus 7 of 290, or 2.4%, of the rest of the respondents.

The eighth statement, "they don't have enough examples," also shows significant variation, to the .05 level, with finding the keyword help screens too tightly packed with information. Two of 10, or 20%, of those who find the keyword help screens are too tightly packed with information also feel they don't have enough examples, versus 15 of 290, or 5.2%, of the rest of the respondents.

The ninth statement is "their explanations are not clear," and this is the final factor to show significant variation with finding keyword help screens too tightly packed with information. Fully half of those who found the keyword help screens too tightly packed with information--5 of 10, or 50%--also find the explanations not clear, versus 29 of 290, or 10%, of the rest of the respondents. One group of people was obviously checking most of the negative statements about keyword help screens to convey their dissatisfaction with them, but this statement showed the strongest negative reaction.

The seventh statement on question 22, as mentioned just above, is that "there are to many of..." the keyword help screens. This was also checked by only ten people, tying it with the choice of finding them too tightly packed with information. Earlier in the paper, it has shown significant variation with answers to question 16d, about the implied "and," learning keyword searching from a passing library staff member, and finding keyword help screens too tightly packed with information.

Those who find there are too many keyword help screens generally performed better on question 16d. Those who learned keyword searching from a passing library staff member were more likely to find that there are too many keyword help screens, as were those who find the keyword help screens too tightly packed with information.

Finding that there are too many keyword help screens shows significant variation with two of the last three statements on question 22. The ninth statement is "their explanations are not clear," and this shows significant variation with finding there are too many of them. Just as for those who find the keyword help screens too tightly packed with information, half of those who find there are too many of them, 5 of 10, or 50%, also find their explanations not clear, versus 29 of 290, or 10%, of the rest of the respondents.

Those who think there are too many keyword help screens also showed significant variation, to the .05 level, with the tenth statement, "they are just right for their purpose." Interestingly enough, 4 of 10, or 40%, of those who think there are too many keyword help screens also think they are just right for their purpose, versus 42 of 290, or 14.5%, of the rest of the respondents. These were the only further significant variations with finding that there are too many keyword help screens.

The eighth statement under question 22 is that the keyword help screens "...don't have enough examples." This was chosen by 17 people, making it the eighth most popular statement. Earlier in the paper, it has shown significant variation with answers to question 16b, about phrase searching, finding the keyword help screens not very useful, and finding them too tightly packed with information.

Those who feel that the keyword help screens don't have enough examples performed worse than the rest of the respondents on question 16b. Those who find the keyword help screens not very useful or too tightly packed with information were more likely to also find that they don't have enough examples.

Feeling that the keyword help screens don't have enough examples correlated significantly with the ninth statement on question 22, saying the keyword help screen explanations are not clear. Six of 17, or 35.3%, of those who felt the keyword help screens do not have enough examples, also felt their explanations are not clear. This is as opposed to 28 of 283, or 9.9%, of the rest of the respondents. This is the only further significant variation with this factor.

The ninth statement on question 22, as mentioned above, is that the keyword help screens' "...explanations are not clear." This item was checked by 34 people, making it the sixth most popular option. Earlier in the paper, it has shown significant variation with status, lack of previous computer experience, answers to questions 16a, 16c, and 16i, about single word searching, calling up the keyword help screens, and truncation, respectively, finding the keyword help screens not very useful, finding them too tightly packed with information, feeling there are too many, and thinking they do not have enough examples.

Underclassmen were the most likely status group to find that keyword help screens' explanations are not clear. Those with no previous computer experience were more likely to check this statement about the keyword help screens. Those who performed worse on questions 16a, 16c, and 16i generally were more likely to find the keyword help screens' explanations not clear. Those who find the keyword help screens not very useful, or too tightly packed with information, or who think there are too many of them or that they do not use enough examples were more likely than the rest of the respondents to find their explanations not clear. There were no further significant variations with this statement.

The tenth and final statement under question 22 is that the keyword help screens "...are just right for their purpose." Forty-six people checked this, making it the fifth most popular option. Earlier in the survey it has shown significant variation with answers to questions 16g and 16h, about positional operators and field limiting, respectively, learning keyword searching with assistance from a passing library staff member, finding the keyword help screens very useful, and finding there are too many of them.

Generally those that find the keyword help screens just right for their purpose were more likely to perform better on questions 16g and 16h. Those who learned keyword searching with the assistance of a passing library staff member were more likely to check this statement. Those who find the keyword screens very useful and those who think there are too many of them are more likely than the rest of the respondents to find them just right for their purpose.

Feeling the keyword help screens are just right for their purpose shows significant variation, to the .05 level, with results on question 24, about approximate amount of useful materials obtained from the last keyword search. Those who find the keyword help screens just right for their purpose are more likely to find more of the materials from their last keyword search useful. (See Table 226.) Over 55% of those who find the keyword help screens just right for their purpose said that most or almost all of the materials from their last keyword search were useful, versus about 35% of the rest of the respondents. Over 13% of the group in question said almost all of the materials from their last keyword search was useful, while less than 5% of the other respondents checked this. There is no way to tell if those who find the keyword help screens just right for their purpose generally have a more positive attitude toward keyword searching, or if they really learned more about keyword searching from the keyword help screens, so that they found more useful materials.

Table 226 Amount of Useful Materials from Last Keyword Search by Find Keyword Help Screens Just Right for their Purpose

	None of Them	Some of Them	Most of Them	Almost All of Them
K= Help Scrns. Just Right	2(4.4%)	18(40%)	19(42.2%)	6(13.3
Didn't Check Option	15(6.1%)	144(58.5%)	75(30.5%)	12(4.9%

Percentages do not always equal 100% due to rounding.

The other factor that showed significant variation with finding keyword help screens just right for their purpose is question 25, about satisfaction with the results of the last keyword search. Those who find the keyword help screens just right for their purpose are more likely to be more satisfied with the results of their last keyword search. (See Table 227.) Almost half of them were very satisfied with the results of their last keyword search, versus 15% of the rest of the respondents. About 22% of those who find keyword help screens just right for their purpose circle "3" on the unsatisfied half of the scale, and none circled "4." This is as opposed to over 29% of the rest of the respondents circling "3" or "4," with 7.5% circling "4" for very unsatisfied.

Table 227 Satisfaction with Results of Last Keyword Search by Find Keyword Help Screens Just Right for Their Purpose

	1(Very Satisfied)	2	3	4(Very Unsatisfie
K= Help Scrns. Just Right	21(46.7%)	14(31.1%)	10(22.2%)	0
Didn't Check Option	36(15%)	134(55.8%)	52(21.7%)	18(7.5%)

Percentages do not always equal 100% due to rounding.

To summarize, generally those with a more positive attitude toward the keyword help screens found keyword searching more satisfying in one way or another than did those who did not evince a positive attitude. Those who checked any more negative statement about keyword help screens were more likely to check other negative statements. Although choice of some of the statements related significantly to performance on the test of keyword knowledge, question 16, perceptions of the keyword help screens related to comparatively little difference. All these factors together seem to characterize a group of people that happen to have used the keyword help screens and show a positive attitude toward them because they have a generally positive attitude toward keyword searching. They are happier with all aspects of keyword searching and tend to do it a bit better. These attitudes relate more to status, age range, length of LUIS experience, and previous computer experience than to actual value of the keyword help screens.

Finding Terms for Keyword Searching. Question 23 asks "how do you come up with terms for keyword searching on LUIS?" Eight options are given, including "other," and respondents could check all that apply. The results are shown in Table 228. The highest reponse by far was received for the option "use whatever comes to mind." Somewhat encouragingly for the fondest wishes of librarians, the second highest reponse level came for getting terms from other LUIS records on a topic; almost a fourth of the total number of respondents checked this, an apparent indication that the message given in library instruction may be getting through. At a medium level of response were the methods of getting terms from magazine indexes, CD-ROMs or journal articles, from a professor, reference book or textbook, and from the *Library of Congress Subject Headings*. Asking a librarian and using a library-produced bibliography were little-used methods.

Table 228 Methods of Finding Terms for Keyword Searching

Use Whatever Comes to Mind	236(59%)
Consult Professor, Reference Books, or Textbook	54(13.5%)
Use Other LUIS Records I've Found on My Topic	99(24.8%)
Use Words I Found Looking in a Magazine Index, CD-ROM Database, or Journal Article	56(14%)
Use *Library of Congress Subject Headings* (Big Red Books)	51(12.8%)
Ask a Librarian	34(8.5%)
Use a Library-Produced Bibliography	5(1.3%)
Other	8(2%)

The first option under question 23, and by far the most popular, is "use whatever comes to mind" for keyword searching terms. It was checked by 236 respondents. Earlier in the paper, it has not shown significant variation with any other factor.

Using whatever comes to mind for terms for keyword searching relates significantly to three other methods for finding such terms. The third option is to "use other LUIS records I've found on my topic," and it shows significant variation with using whatever comes to mind. Those who use whatever comes to mind are much less likely to use other LUIS records--69 of 236, or 29.2%, versus 30 of 64, or 46.9%, of the other respondents.

The fourth option under question 23 is to find keyword searching terms by using words from magazine indexes, CD-ROM databases, or journal articles, and it shows significant variation with using whatever words come to mind. Again, those who use whatever comes to mind are much less likely to use the other listed sources--36 of 236, or 15.3%, versus 20 of 64, or 31.3%, of the rest of the respondents.

The sixth option for finding keyword terms is to ask a librarian, and it is the final factor to show significant variation, to the .05 level, with using whatever comes to mind for keyword terms. Just as above, those who use whatever comes to mind are less likely than the rest of the respondents to ask a librarian for keyword searching terms--22 of 236, or 9.3%, versus 12 of 64, or 18.8%, of the rest of the respondents. This group of people obviously takes a decidedly unorganized approach to developing terms for keyword searching.

The second option under question 23 is "consult professor, reference books, or textbook," and 54 people chose it, making it the fourth most popular option for finding keyword searching terms. Earlier in the survey, this factor has shown significant variation with status, length of LUIS experience, and previous experience with an OCLC terminal.

ISU upperclassmen and then underclassmen were most likely of the various status groups to choose this option for keyword searching term development. Those with the shortest and those with the longest experience tended to check this option more than the other respondents. Those who have previously used an OCLC terminal were less likely to choose this option.

Consulting a professor, a reference book, or a textbook to find terms for keyword searching shows significant variation, to the .05 level, with one other option under question 23--the sixth one, "ask a librarian." Those who have used the method in question to find terms for keyword searching are more likely than the rest of the respondents to also ask a librarian for terms--11 of 54, or 20.4%, versus 23 of 246, or 9.3%, of the rest of the respondents. These options do seem to fit together.

The final question that shows a significant variation when related to using a professor, reference book, or textbook to find keyword searching terms is question 26, comparing keyword searching to a=, t=, and s= searching. Those who checked this option for finding keyword searching terms are generally more positive toward keyword searching, as opposed to the other searching methods. (See Table 229.) Almost a third who checked the option in question found keyword searching superior to the other methods, versus less than 15% of the rest of the respondents. The numbers are reversed for using keyword searching only as a last resort--about 15% of those who use a professor, reference book, or textbook to find keyword terms, versus about a third of the rest of the respondents. The group in question may be more library-oriented in their thinking and hence more positive toward keyword searching.

Table 229 Comparing Keyword Searching to A=, T=, S= Searching by Consult a Professor, Reference Book, or Textbook for Keyword Searching Terms

	K= Superior	K= Best for Topic	K= Last Resort
Consult Prof., Ref B, or Text	16(31.4%)	27(52.9%)	8(15.7%)
Didn't Check Option	31(13.2%)	126(53.6%)	78(33.2%)

Percentages do not always equal 100% due to rounding.

The third option under question 23 is "use other LUIS records I've found on my topic" to get keyword search terms. It was checked by 99 people, making it the second most popular option, and showing that this useful concept has spread to a rather surprising degree, in that about 1 of every 3 keyword searchers surveyed claimed to use it. Earlier in the survey, it has shown significant variation with using whatever comes to mind for keyword search terms--those who use whatever comes to mind were less likely to use other LUIS records.

Using other LUIS records found on a topic to determine keyword terms relates significantly to two other methods of finding keyword terms under question 23. The fourth option, "use words I found looking in a magazine index, CD-ROM database, or journal article," shows significant variation with the option in question. Those who use other LUIS records are much more likely than the rest of the respondents to use magazine indexes, CD-ROM databases, or journal articles--32 of 99, or 32.3%, versus 24 of 201, or 11.9%. This would seem to be a more sophisticated library users group.

The fifth option under question 23 is to use the Library of Congress Subject Headings to find keyword searching terms, and this shows significant variation to the .05 level with using other LUIS records on a topic. Again, the group in question was more likely than the rest of the respondents to use LCSH to find keyword searching terms--24 of 99, or 24.2%, versus 27 of 201, or 13.4%. This again would indicated more sophisticated library users.

The final option that shows significant variation with using other LUIS records on a topic to find keyword searching terms is question 26, comparing keyword searching to a=, t=, and s= searching. The pattern on this correlation is not quite as clear as it was for those who consult a professor, reference book or textbook for terms, but it still shows a trend toward those who use other LUIS records on a topic to find keyword searching terms being more positive toward keyword searching than the rest of the respondents. (See Table 230.) About the same percentage of each group feel keyword searching is superior. Two-thirds of those who use other LUIS records see keyword searching as best for topic requests, though, versus less than half of the rest of the respondents. Less than 20% of those who use other LUIS records to find keyword search terms consider keyword searching a last resort, versus over 35% of the rest of the respondents. This fits with a picture of a group of people more comfortable with library use and more positive toward keyword searching.

Table 230 Comparing Keyword Searching to A=, T=, S= Searching by Us
Other LUIS Records on a Topic for Keyword Searching Terms

	K= Superior	K= Best for Topic	K= Last Resort
Use Other LUIS Records	14(15.1%)	62(66.7%)	17(18.3%)
Didn't Check Option	33(17.1%)	91(47.2%)	69(35.8%)

Percentages do not always equal 100% due to rounding.

The fourth option under question 23 is to "use words I found looking in a magazine index, CD-ROM database, or journal article" to find keyword searching terms, and 56 people checked this. It is the third most popular option. Earlier in the paper, it has shown significant variation with previous use of CD-ROMs, with using whatever comes to mind for keyword searching terms, and with using other LUIS records on a topic for keyword searching terms.

Those who had previously used CD-ROMs were more likely than the rest of the respondents to have used a magazine index, CD-ROM database or journal article to develop keyword searching terms, as were those who use other LUIS records on a topic for terms. Those who use whatever comes to mind were less likely to use the method of developing keyword search terms currently in question.

The only other item showing significant variation, to the .05 level, with getting keyword searching terms from a magazine index, CD-ROM database or journal article is another option under question 23. The sixth option is "ask a librarian," and this showed some significant variation with the option in question. Those who use the method in question were also more likely to ask a librarian for terms--11 of 56, or 19.6%, versus 23 of 244, or 9.4%, of the rest of the respondents. This would indicate that this group of people is also a bit more library-oriented and comfortable with the library.

The fifth option under question 23, about finding terms for keyword searching, is "use *Library of Congress Subject Headings* (big red books)." Fifty-one respondents checked this option, making it the fifth most popular option. Earlier in the survey, it has shown significant variation with gender, frequency of LUIS searching, length of LUIS searching experience, previous use of online dial-up databases or an OCLC terminal, and using other LUIS records found on a topic to develop keyword searching terms.

Females were more likely to have used *LCSH* to find keyword searching terms, one of only two significant variations found by gender. Those who search LUIS more frequently or who have searched LUIS for a longer length of time were also more likely to have used this method to find keyword searching terms. Those who had previous experience using online dial-up databases or using an OCLC terminal were also more likely to use LCSH to find keyword searching terms. Those who use other LUIS records on a topic to find keyword searching terms were more likely than the rest of the respondents to also use LCSH.

The only other option that shows significant variation, to the .05 level, with using LCSH to find keyword searching terms is another option on question 23--the sixth one, "ask a librarian." Eleven of 51, or 21.6%, of those who use LCSH to find keyword searching terms also say they ask a librarian for terms, versus 23 of 249, or 9.2%, of the rest of the respondents. This group, which uses LUIS records on a topic, LCSH, and asking a librarian to find keyword searching terms, is a fairly sophisticated library patron group.

The sixth option under question 23, as mentioned above, is "ask a librarian" for help in finding keyword searching terms. This was chosen by only 34 people, making it the sixth most popular option. Earlier in the survey, it has shown significant variation with finding out about the availability of keyword searching from a librarian, or from a library instruction class/workshop, using whatever comes to mind for keyword searching terms, or consulting a professor, reference books, or textbooks, using words found in a magazine index, CD-ROM database, or journal article, or using Library of Congress Subject Headings to find keyword searching terms.

Those who learned of keyword searching availability from a librarian or from a library instruction class/workshop were more likely than the rest of the respondents to check that they ask a librarian for keyword searching terms. Those who use whatever comes to mind for keyword searching terms were less likely to ask a librarian for them. Those who consult a professor, reference books, or textbooks, use words from a magazine index, CD-ROM database, or journal article, or use LCSH to find keyword searching terms were more likely to also ask a librarian for terms.

The only other option showing significant variation, to the .05 level, with asking a librarian for keyword searching terms is the seventh option under question 23, using a library-produced bibliography to find keyword searching terms. Those who say they ask a librarian for keyword searching terms were somewhat more likely than the other respondents to have gotten terms from a library-produced bibliography, but only five people checked the latter option. Two of 34, or 5.9%, of those who ask a librarian for keyword searching terms also use library-produced bibliographies to find them, versus 3 of 266, or 1.1%, of the rest of the respondents.

The seventh option under question 23, about finding keyword searching terms, is, as mentioned above, "use a library-produced bibliography." Only five people checked this, making it the least popular option. Earlier in the survey, it has shown significant variation with learning of keyword searching availability from a library instruction class/workshop, and with asking a librarian for keyword searching terms.

Those who learned of keyword searching availability from a library instruction class/workshop, and those who ask a librarian for keyword searching terms, were more likely than the rest of the respondents to use a library-produced bibliography to find keyword searching terms. This option showed no further significant variation with the rest of the survey.

To summarize results for question 23, most respondents do not check anything for keyword searching terms; they just use whatever they can think of--not a very surprising result. There is a small group of more sophisticated library users who do things like consulting a professor, reference book, or textbook, and ask a librarian; or use other LUIS records on a topic, use magazine indexes, CD-ROM databases or journal articles, and use LCSH. Fully a fourth of all the respondents did check that they use other LUIS records on a topic to find keyword search terms; even if they have not actually used this method, this is an encouraging sign that they at least grasp it. This group was one of the two that showed a more positive attitude toward keyword searching on question 26; the other was the group which consults a professor, reference book, or textbook to find keyword search terms. Since these users did not show greater satisfaction with results of their last keyword search and did not show difference on amounts of useful materials found, it is possible that their more positive attitude toward keyword searching and their understanding of where to find keyword terms stem from a common point that leads them to be more comfortable with the OPAC and happier with it.

Amount of Useful Materials From Last Keyword Search. Question 24 on the survey attempts to elicit from respondents estimates of the amount of useful materials they got from their last keyword search. It reads "About how many of the materials listed in your last keyword search were useful?" They were to check only one option. The highest response was received for "some of them." (See Table 231.) The lowest response was received for "none of them," but it was almost the same as for "almost all of them." This, and the other three questions on the questionnaire, together with their correlations, get to the heart of some of the questions raised by this project.

Table 231 Amount of Useful Materials From Last Keyword Search

None of Them	17(4.3%)
Some of Them	162(40.5%)
Most of Them	94(23.5%)
Almost All of Them	18(4.5%)
Unusable Answers	2(.5%)
Blank	107(26.8%)

Percentages do not always equal 100% due to rounding.

Earlier in the survey, estimated amount of useful materials from the last keyword search has varied significantly with future keyword searching plans, learning of keyword searching availability from a librarian, answers to questions 16d, 16h, and 16i, about the implied "and," field limiting, and truncation, respectively, frequency of keyword searching, perceived difficulty of learning keyword searching, learning keyword searching through trial and error, or with assistance from a passing library staff member, not being aware of the keyword help screens, and feeling the keyword help screens are just right for their purpose. All of these factors related to how many useful materials users perceived themselves as getting from their last keyword search.

These estimations may or may not reflect reality, so the significant may be actually affecting the amount of useful materials received, may be affecting the perception of this amount, or both variables in question may be related to a third variable.

Those who plan to do keyword searching in the future generally found more of the materials from their last keyword search useful than did those who do not know if they will do another keyword search, or those who will not do another one. Those who found out about keyword searching availability from a librarian found more of the materials from their last keyword search useful.

Those who found most of the materials useful performed best on question 16d, about the implied "and"; those who said none or almost all of their results were useful performed equally poorly on it. Those who said most of their results were useful performed best on question 16h, about field limiting, and those who said almost all were useful performed second best. Those who said most of their results were useful also performed best on question 16i, about truncation, with those who said some were useful performing second best, just as in question 16d. Perhaps those who said all of their results were useful were being too uncritical about the system, or had such simple topics that they had no need or opportunity to learn more sophisticated searching techniques. It is notable, though, that on these statements of keyword knowledge on question 16 where perceived amount of useful materials from the last keyword search related to differences in performance, those who checked that none of the materials were useful always performed worst. One cannot be sure whether this lack of knowledge leads to worse keyword performance, producing searches with less useful materials, or whether more of a negative attitude toward keyword searching is being demonstrated.

Amounts of useful materials from the last keyword search dropped as frequency of keyword searching dropped; the less frequent the user, the lower the amount of useful materials found, or perceived to be found. In the area of keyword searching difficulty, the more difficult respondents perceive keyword searching to be to learn, the less likely they are to perceive the materials retrieved from their last keyword search as useful. Those who used trial and error to learn keyword searching were more likely to perceive the more of the results of the last keyword search as useful than were those who did not check using trial and error. Those who learned keyword searching with the assistance of a passing library staff member were more likely to feel that more of the materials from their last keyword search were useful. Those who were unaware of the keyword help screens were likely to find fewer of the materials retrieved on their last keyword search useful. Those who find the keyword help screens just right for their purpose are more likely to find more of the materials from their last keyword search useful.

The amount of useful materials obtained in the last keyword search shows significant variation with two of the remaining three questions on the survey. Question 25 is about satisfaction with the results of the last keyword search, and it is not surprising that this differs significantly in connection with perceived amount of useful materials obtained. Generally, satisfaction rises as perceived amount of useful materials rises; anomalies are only found on the two groups at extremes for amounts of materials, because their numbers are so small. (See Table 232.) Almost two thirds of those who found no useful materials on their last keyword search were very unsatisfied, versus no more than 11.1% of any of the other groups. Almost 93% of those who found no useful materials were on the unsatisfied half of the scale. This drops to about 30% for those found some useful materials, then to about 13% for those who found most of the materials useful. It rises again, though, to over 27% of those who found almost all of their materials useful--a small group, however. None of those who found no useful materials were very satisfied, versus about 10% of those who found some, 33% of those who found most of them useful, and over 60% of those who found almost all of their materials useful. Generally, the more useful materials the user perceived to be obtained by the last keyword search, the more satisfied s/he was--not a surprising result.

Table 232 Satisfaction with Results of Last Keyword Search by Amount Useful Material from Last Keyword Search

	1(Very Satisfied)	2	3	4(Very Unsatisfie
None Useful	0	1(7.1%)	4(28.6%)	9(64.3%)
Some Useful	16(10.2%)	93(59.2%)	44(28%)	4(2.5%)
Most Useful	30(33%)	49(53.8%)	10(11%)	2(2.2%)
Almost All Useful	11(61.1%)	2(11.1%)	3(16.7%)	2(11.1%)

Percentages do not always equal 100% due to rounding.

Amount of useful material received in the last keyword search also related significantly to user comparisons of keyword searching to a=, t=, and s= searching on question 26. Generally, the more useful materials obtained from the last keyword search, the more likely the respondent was to take a more positive attitude toward keyword searching. (See Table 233.) Again, the anomalies mainly appeared for those who found almost all of their results useful, a small group. Over 80% of those who found no useful materials in their last keyword search see keyword searching as only a last resort. This drops to about 31% for those who found some, about 15% for those who found most of them useful, but goes back up to about 29% for those who found almost all of them useful. The group most likely to find keyword searching superior and use it most of the time were those who found most of the results of their last keyword search useful. The second most positive group was the group that found some of the materials useful. The group that found no useful results, though, did have the lowest rate of finding keyword searching superior.

Table 233 Comparison of Keyword Searching to A=, T=, and S= Searching

Amount of Useful Material from Last Keyword Search	K= Searching Superior	K= Searching Best for Topic	K= Searching Last Resort
None Useful	1(5.9%)	2(11.8%)	14(82.4%)
Some Useful	23(15.1%)	81(53.3%)	48(31.6%)
Most Useful	20(21.5%)	59(63.4%)	14(15.1%)
Almost All Useful	2(11.8%)	10(58.8%)	5(29.4%)

Percentages do not always equal 100% due to rounding.

The more useful materials obtained from the last keyword search, the more satisfied the user was. The relationship could be straightforward cause and effect, or it could be that both factors are reflections of a general positive attitude toward keyword searching. The more useful materials obtained from the last keyword search, the more positive the attitude toward keyword searching, as compared to a=, t=, and s= searching. One cannot really know if the amount of useful materials does lead to a more positive attitude, or if a more positive attitude leads to more knowledge of keyword searching, which leads to more useful materials.

Satisfaction with Results of Last Keyword Search. Question 25 is about satisfaction with the results of the respondent's last keyword search. Users were asked to circle a number on a scale of 1 to 4, from very satisfied to very unsatisfied. Results are given in Table 234. Over half of the all the respondents were very satisfied or satisfied with the results of their last keyword search. Only a little over 20% circled "3" or "4." Generally, the great majority of people who do keyword searching--71.4%, or 205 of 287--are satisfied with the results of their last keyword search.

Table 234 Satisfaction with Results of Last Keyword Search

1(Very Satisfied)	57(14.3%)
2	148(37%)
3	63(15.8%)
4(Very Unsatisfied)	19(4.8%)
Unusable Answers	4(1%)
Blank	109(27.3%)

Percentages do not always equal 100% due to rounding.

Earlier in the survey, satisfaction with results of one's last keyword search has differed significantly with lack of previous computer experience, future keyword searching plans, answers to questions 16a, 16b, 16e, and 16h, about word searching, phrase searching, Boolean operators, and field limiting, respectively, frequency of keyword searching, perceived difficulty of learning keyword searching, perceived difficulty of learning Boolean operators, using trial and error, information desk librarian assistance, or assistance from a passing library staff member to learn keyword searching, finding the keyword help screens very useful, finding them not very useful, and finding them just right for their purpose, and amount of useful material obtained in the last keyword search.

Those with no other computer experience were noticeably less satisfied with their keyword search results than were the rest of the respondents. Those who planned to do keyword searching in the future were more satisfied with the results of their last keyword search than were those who did not plan to do it, or who did not know if they would. On question 16a, those who disagreed or did not know the answer were less likely to be satisfied with the results of their last keyword search than were those who agreed with the statement that keyword searching allows one to search for a single word in LUIS. On question 16b, about keyword searching allowing access to a phrase in LUIS, generally as respondents showed poorer performance, they were less satisfied with the result of their last keyword search. Those who performed better on question 16e, about Boolean operators, were more satisfied with the results of their last keyword search. There is also a clear and pronounced pattern of better performance on question 16h, about field limiting, connecting connecting with greater satisfaction with results of the last keyword search performed. For four of ten elements of keyword knowledge--word searching, phrase searching, Boolean operators, and field limiting--less ignorance meant greater satisfaction.

Those who do keyword searching with any frequency at all are much more satisfied with their results than those who almost never do it, but, of course, one cannot tell if people search more because they are more satisfied, or they are more satisfied because they search more. The easier the respondent perceived learning keyword searching to be, the more satisfied s/he was with the results of the last keyword search. Satisfaction with results of the last keyword search also falls as perceptions of difficulty with learning Boolean operators rises.

Those who used trial and error to learn keyword searching were somewhat more likely to be more satisfied with the results of their last keyword search. There are indications that those who learned keyword searching with information desk librarian assistance are more satisfied with the results of their last keyword search; the same is true of those who learned from a passing library staff member.

Those who found the keyword help screens very useful were much more likely to be generally satisfied with the results of their last keyword search. Those who find keyword help screens not very useful definitely show less satisfaction with the results of their last keyword search. Those who find the keyword help screens just right for their purpose are more likely to be more satisfied with the results of their last keyword search. Finally, those who feel they found more useful materials in their last keyword search were more satisfied with it.

Level of satisfaction with results of the last keyword search shows significant variation with comparative attitude toward keyword searching, as related to a=, t=, and s= searching, from question 26. Those who are more satisfied with the results of their last keyword search are more likely to find keyword searching superior or better for topic searching and less likely to consider it a last resort. (See Table 235.) The "very satisfied" group had the highest percentage of members saying keyword searching is superior and the lowest percentage saying it is a last resort for them. The "very unsatisfied" group had the lowest percentage saying keyword searching is superior and the highest (two-thirds) saying it is a last resort. The progression on each attitude statement is fairly clear.

Table 235 Comparison of Keyword Searching to A=, T=, and S= Searching
Satisfaction with Results of Last Keyword Search

	K= Searching Superior	K= Searching Best for Topic	K= Searching Last Resort
1(Very Satisfied)	16(29.6%)	32(59.3%)	6(11.1%)
2	20(14.1%)	88(62%)	34(23.9%)
3	9(15%)	24(40%)	27(45%)
4(Very Unsatisfied)	1(5.6%)	5(27.8%)	12(66.7%)

Percentages do not always equal 100% due to rounding.

Those who know more about keyword searching, to the extent of understanding better what it basically does, what Boolean operators are, and what field limiting is, are more satisfied with their search results. The learning methods connected with greater satisfaction are learning keyword searching directly from a library staff member and trial and error. The last method is a bit difficult to explain as a cause of greater satisfaction, but at least those who use trial and error have actually gotten out there and done keyword searching and are individually involved--perhaps they feel greater "ownership" of their results and more satisfaction. Other correlations with satisfaction seem to stem from a generally more positive attitude some users have toward the system, probably related to factors like status, age, and computer experience.

Comparison of Keyword Searching to A=, T=, and S= Searching. The second-to-last question on the survey asks users to compare keyword searching to a=, t=, and s= searching and seeks to elicit general attitude toward keyword searching. Do users perceive themselves as using keyword searching just about every time they search, do they use it in moderation under certain circumstances, or do they avoid it if at all possible? The great majority of users are not embracing keyword searching wholeheartedly and indiscriminately. (See Table 236.) About half of those doing keyword searching perceive themselves as using it for topic searching, when it is most often more appropriate, and using a= and t= searching when they are appropriate. Almost twice as many people have the most negative attitude toward keyword searching as have the most positive attitude. They are about twice as likely to see it as a last resort as they are to use it most of the time. At least as far as user self-reporting goes, no one needs to worry that users are using keyword searching exclusively. In fact, in light of the issues raised by searching multiple databases through the OPAC system, users may well need to be urged to use keyword searching more.

Table 236 Comparison of Keyword Searching to A=, T=, and S= Searching

Keyword searching is usually superior to all other methods, and I use it most of the time.	47(11.8%)
Keyword searching is better when I want to find information on a subject, but I still use a= and t= searching when appropriate.	153(38.3%)
I only use keyword searching as a last resort when I can't find something using the other search methods.	86(21.5%)
Unusable Answers	3(.8%)
Blank	111(27.8%)

Percentages do not always equal 100% due to rounding.

Factors that have connected significantly with comparative attitude toward keyword searching earlier in the survey include status, subject area, age range, length of LUIS experience, previous use of a computer at school for a computer course, type of LUIS search entry on last search, future keyword searching plans, finding out about the availability of keyword searching from the Welcome to LUIS screen, being unaware of any listed keyword searching instruction methods, answers to question 16a, 16b, 16e, 16f, 16g, 16h, and 16i, about word searching, phrase searching, Boolean operators, stopwords, positional operators, field limiting, and truncation, respectively, frequency of keyword searching, perceived difficulty of keyword searching, referring to keyword help screens only occasionally, finding keyword help screens very useful, consulting a professor, reference book, or textbook, or using other LUIS records on a topic, to find keyword searching terms, amount of useful materials obtained in the last keyword search, and satisfaction with results from the last keyword search.

Faculty were much more likely than other groups to check the negative statement, and much less likely to check the most positive statement. As far as subject area is concerned, people in business and science were most likely to check the most positive statement, but those in science were also, along with humanities, most likely to check the most negative statement. Those in nursing and HPER were very likely to check the moderate statement. Younger age ranges had a more positive attitude toward keyword searching. Those with shorter LUIS experience were more likely than other groups to find keyword searching superior and those with longer experience were more likely than other groups to use it as a last resort.

Those with previous computer experience in a computer course were more likely to consider keyword searching superior and less likely to see it as a last resort than other groups. Concerning the type of LUIS search done on the last search, those who said they used author or Library of Congress Subject Heading were more likely than other groups to consider keyword searching a last resort, and those who used topic words were more likely to have one of the two more positive attitudes toward keyword searching. Those who planned to do keyword searching in the future were much more likely to have a more positive attitude toward keyword searching. The group that learned of the availability of keyword searching from the Welcome to LUIS screen shows a slightly more negative attitude toward k= searching than the rest of the respondents on this question. Those who were unaware of any listed keyword searching instruction methods were more likely to consider keyword searching a last resort.

Those who see keyword searching as a last resort performed worse on question 16a, about searching for a word anywhere in a LUIS record, than the other two groups. Those who consider keyword searching superior and use it most of the time performed best on question 16b, about phrase searching, and those who use keyword searching for subject inquiries and title and author where appropriate performed better than those who use keyword searching only as a last resort. Those who considered keyword searching only as a last resort definitely performed worst on question 16e, about Boolean operators, by fairly large margins. In all of these cases, it is impossible to say, of course, whether they see keyword searching as a last resort because they know less about it, or they know less about it because they see it as a last resort.

Generally, the more positive the attitude toward keyword searching, the better the performance on question 16f, about stopwords. This is also true of question 16g, about positional operators. The more positive the attitude toward keyword searching, the better the performance on question 16h, too, about field limiting. Finally, the more positive the attitude toward keyword searching, the better the general performance on question 16i, about truncation.

In the area of frequency of keyword searching, the pattern of results is a bit muddy, but those who use keyword searching almost every time they use LUIS had the highest percentage saying that keyword searching is superior to other forms of searching. Positive comparative attitudes toward keyword searching rise as perceived ease of learning keyword searching rises. Those who said they use keyword help screens only occasionally were less than half as likely as the rest of the respondents to consider keyword searching superior to the other methods. Those who find the keyword help screens very useful generally had a more positive attitude toward keyword searching. Those who find keyword searching terms by consulting a professor, a reference book, or a textbook are generally more positive toward keyword searching, as opposed to the most of the other searching methods. Those who use other LUIS records on a topic to find keyword searching terms are more positive toward keyword searching, too. Finally, those who retrieved more useful material from their last keyword search and those who were more satisfied with the results of their last keyword search have a more positive attitude toward keyword searching.

Comparative attitude toward keyword searching shows significant variation, to the .05 level, with the final question on the survey, question 27, about attributions for failure of keyword searches. The main differences between attitude groups come on the second and third reasons for failure of keyword searches. (See Table 237.) As attitude becomes less positive, the likelihood of checking that "I'm not finding the right words for my topic" drops, from about 65% for the most positive group to about 43% for the negative group. At the same time, checking "I don't know enough about how to do a keyword search" became more likely as attitude became less positive. This is an indication that those who have a more negative attitude may have it because they feel more ignorant about keyword searching, or they could be more ignorant because they have a more negative attitude.

Table 237 Attribution for Failure of Keyword Searches by Comparison Keyword Searching to A=, T=, and S= Searching

	Topic Too Specific	Not Finding Right Words	Don't Know About Keyword	Doesn't L Material
K= Superior	12(26.8%)	30(65.2%)	2(4.3%)	2(4.3%)
K= Best for Topic	28(19.9%)	84(59.6%)	17(12.1%)	12(8.5%)
K= Last Resort	17(24.3%)	30(42.9%)	17(24.3%)	6(8.6%)

Percentages do not always equal 100% due to rounding.

Although one cannot be sure if attitude causes ignorance or ignorance causes attitude, it would seems reasonable to conclude that those with a more negative attitude toward keyword searching are older, often faculty, with less computer experience, some in subject areas one associates less with computing, who have not had as much opportunity to learn about keyword searching, and who cannot, or will not, learn from sources like keyword help screens. In fact, negative attitude and ignorance probably feed each other, with ignorance resulting in poorer searches, which feeds negative attitude.

Attributions for Failure of Keyword Searches. The final question on the survey asks users to tell the main reason why their keyword searches fail, when they are unsuccessful. Four reasons were given, and they were asked to choose the one that most closely applies. The most checked statement was "I'm not finding the right words for my topic," and the least checked was "LUIS doesn't list material on my topic." (See Table 238.) Two of the statements, about having a topic that is too specific and LUIS not listing material on the topic, pin the blame on the system or other factors; the other two statements, about not finding the right words for the topic and not knowing enough about keyword searching, pin the blame on the user. This is a generalization, but the overwhelming majority of respondents to this question gave a reason for failure that implies some lack in themselves. Since many of them are probably right, it is encouraging that many users seem to appreciate that they need to know more about the process of keyword searching. Now it is up to the librarians to convey that knowledge to them.

Table 238 Attributions for Failure of Keyword Searches

My topic is too specific.	59(14.8%)
I'm not finding the right words for my topic.	147(36.8%)
I don't know enough about how to do a keyword search.	36(9%)
LUIS doesn't list material on my topic.	22(5.5%)
Unusable Response	27(6.8%)
Blank	109(27.3%)

Percentages do not always equal 100% due to rounding.

Earlier in the survey, attributions for failure of keyword searches have varied significantly with age range, future keyword searching plans, learning of keyword searching availability from the Welcome to LUIS screen, answers to question 16c, 16d, and

16g, about getting to the keyword help screens, the implied "and," and positional operators, respectively, frequency of keyword searching, perceived difficulty of keyword searching, and the comparison of keyword searching to a=, t=, and s= searching.

The two youngest age ranges were more likely to think that they had too specific a topic and less likely to think they don't know enough about keyword. Those 31-40 were very uncertain of themselves, almost 80% thinking they are not finding the right words or don't know enough about keyword searching. Those 41 or older were more likely than any other group to say they don't know enough about keyword searching, but were also most likely to say that LUIS does not have material on their topic. Related to future keyword searching plans, those who planned to do keyword searching in the future were more likely to attribute unsuccessful keyword searches to the fact that they were not finding the right words for their topic than were those who did not know whether they would do keyword searching again. The "don't know" group were more likely than the future keyword searchers to attribute lack of success to not knowing enough about keyword searching. Those who learned of keyword searching availability from the Welcome to LUIS screen are more likely than the rest of the respondents to attribute lack of success to a too specific topic, and less likely to attribute it to not knowing enough about how to do a keyword search, although there is evidence that they really do not know enough about keyword searching.

The group that performed best on question 16c, about how to get to the keyword help screens, was the group that checked "I'm not finding the right words for my topic" as a reason for an unsuccessful keyword search. The worst performers on question 16c were those who checked "LUIS doesn't list material on my topic" as a reason for an unsuccessful keyword search, indicating they might well be wrong in their attribution. Results are similar for question 16d, about the implied "and," with the best performers tending to think they are not finding the right words for their topic. Those who think there is no material on their topic in LUIS agreed with the statement at a fairly high rate, but also disagreed at a very high rate. Generally, the worst performance on question 16g, about positional operators, was by those who attributed their unsuccessful keyword searches to having too specific a topic, indicating they may in fact need to know more about keyword searching. The second worst performance was, however, by those who said they did not know enough about keyword searching. Best performance was, again, by those who said they were not finding the right words for their topic.

In the area of frequency of keyword searching, those who use keyword searching almost every time, or more than half the times, they use LUIS had a large percentage checking "I'm not finding the right words for my topic" as the most likely reason for their keyword search failures. Those who do keyword searching less than half the times they use LUIS were also very likely to check this, but they were more likely than the more frequent keyword searchers to check that they don't know enough about how to do a keyword search, and that LUIS doesn't list material on their topic. Those who almost never do keyword searching said that their topic is too specific and they do not know enough about keyword searching, at much higher rates than the more frequent keyword searchers.

Those who thought keyword searching was very easy to learn were most likely to attribute keyword searching failure to not finding the right words for a topic. Those who circled "3" on question 19, getting into the more difficult half of the scale, were most likely to attribute failure to not knowing enough about keyword searching. Four of the six people who found keyword searching very difficult to learn checked not finding the right words for their topics, and two of them checked having too specific topics. Finally, as noted above, as attitude on question 26 becomes less positive, the likelihood of checking that "I'm not finding the right words for my topic" drops, from about 65% for the most positive group to about 43% for the negative group. At the same time, checking "I don't know enough about how to do a keyword search" becomes more likely as attitude becomes less positive.

Indications from responses and correlations to question 27 are that there is a group of keyword searchers who is better informed about keyword searching and probably more successful at the mechanics of it, but who appreciate that they need to learn more about how to find right words for their topic, an aspect of keyword searching that has not been given as much time in some instructional programs yet, including the one at Indiana State University. These people would also be helped by adding intelligence to the system so that it provided synonyms and cross references automatically.

There is another group of people who, for the most part, seem to appreciate that they do not know enough about keyword searching, causing some keyword searches to fail. Some of the faculty are more likely to think that LUIS does not have enough material on their topic, and they may well be right, although, of course, it is not possible to tell when they are right and when they are just doing their keyword search incorrectly.

CONCLUSION

In 1983, Charles Hildreth of OCLC wrote "We should not let the 'sirens of Boolean' woo us away from investigation and efforts to improve online links between entry vocabulary and the assigned, controlled vocabulary, online links between related subject terms, and online, intelligent search guidance."[34] In 1989, he sounded the same message, expanding it to encompass the growing realization that there are difference kinds of subject searchers, those who have a closely defined, completely predetermined "known subject," and those who begin subject searches with no clear idea of what they are looking for, and what they will end up with. He notes that "determined explorers and the just plain curious need a flexible, rich, contextual subject search and browsing mode which offers plenty of navigation and trailblazing options."[35] Various findings of this study lead to a conclusion that supports his call for OPAC subject searching options.

One finding of this study is that the great majority--80%--of ISU LUIS users have done keyword searching and only 2.5% say they do not plan to do it in the future, but most users do not see themselves as doing it most of the time. Only about 11% say that they consider keyword searching superior and use it most of the time, although about 30% said they use it every time they use LUIS. This still does not approach the majority of users. Knowledge about keyword searching is not nearly as widespread as it needs to be for useful performance. The only statement about keyword searching that received as much as 65% agreement was the one saying keyword searching allows searching of a word anywhere in LUIS, and none of the other nine statements received more than 52.5% agreement. Only 50% of the users even understood that s= searching only uses Library of Congress Subject Headings.

There is evidence that some instruction methods have a material effect on keyword knowledge level. Use of library instruction classes/workshops, keyword help screens, and library handouts to learn keyword searching was connected with better performance on some statements under question 16, about keyword knowledge. Those who learned of the availability of keyword searching in a library instruction class performed better on all of the statements of keyword knowledge.

The path indicated by this study's results is one of more instruction presented in a form the users will utilize and comprehend. In light of MDAS, especially, all users, particularly faculty, need to be educated to the importance of using keyword searching, and they need to be taught the basics which will allow them to get a reasonable set of results to look through. Although formal library instruction classes are useful and effective, more effort needs to be concentrated on instruction options that can be used at a terminal independently and are part of the system. Improvement of keyword help screens, error messages, and the opening screen to LUIS would be worthwhile. More attention needs to be paid also to having the software automatically compensate for user errors and ignorance, and to implementing a more menu-based system, in addition to the command system. This is a very active research area, and should produce useful results.

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